NOV 18 1909

THE IRON AGE

Published every Thursday Morning by David Williams Co., 14-16 Park Place, New York.

Vol. 84: No. 21. *New York, Thursday, November 18, 1909.* $5.00 a Year, including Postage. Single Copies, 15 Cents.

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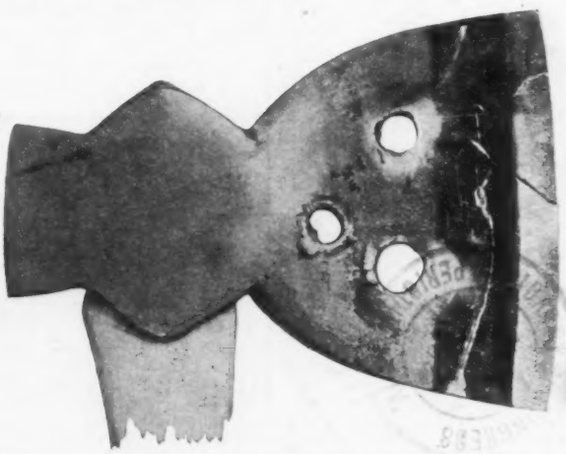

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SEE PAGE 32

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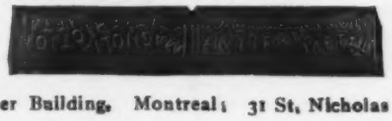

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THE IRON AGE

New York, Thursday, November 18, 1909.

Chapman Electrically Operated Valves.

Electrically operated valves offer many advantages as compared with the hand operated type. They can be operated from any point, often permit a simpler layout of piping, and in time of accident make it possible to shut off a valve that might otherwise be inaccessible on account of fire, escape of steam, &c. The stopping and starting of large unit upon short notice is expedited by motor driven valves for the large exhaust piping, and when installed between the boilers and steam header, or the header and the engine, and between sections of the header, they enable any break in the piping to be isolated at once, or any other trouble checked, by closing switches which may be located a safe distance away from the piping. It is sometimes necessary in steam plants, because of limited space, to locate valves in places difficult of access, and in such cases valves worked by motors are desirable.

In hydraulic power stations electrically operated valves have also been found to be of value, as frequently it is possible only by considerable special gearing, &c., to arrange the control of hand operated valves so that it is conveniently situated for the switchboard attendant. This may be eliminated by electrical operation, and the control can be located on the switchboard if desired. An objection to hand operation of large sluice gates is that they either require several men to operate them or are geared so slow that it requires a long time for one man to perform the action.

In municipal water supply systems motor driven valves can be employed with good results and are claimed to reduce operating expenses. There have been several instances where water mains have burst, causing considerable damage before the water could be shut off. Such emergencies may be taken care of by a system of electrically operated valves, which will disconnect the supply from any given section. It is possible to place the control of the valves under an operator at a central point available by telephone, or to provide a control station for each section to be used like a fire alarm box or a police telephone station, such stations to be accessible to police officers or watchmen on duty.

Manufacturing plants have opportunity for the use of electrically operated valves for such purposes as maintaining between certain limits the hight, pressure or temperature of a liquid in a tank. When it is necessary to locate valves in places not easily reached they are not operated as often or as promptly as economy might re-

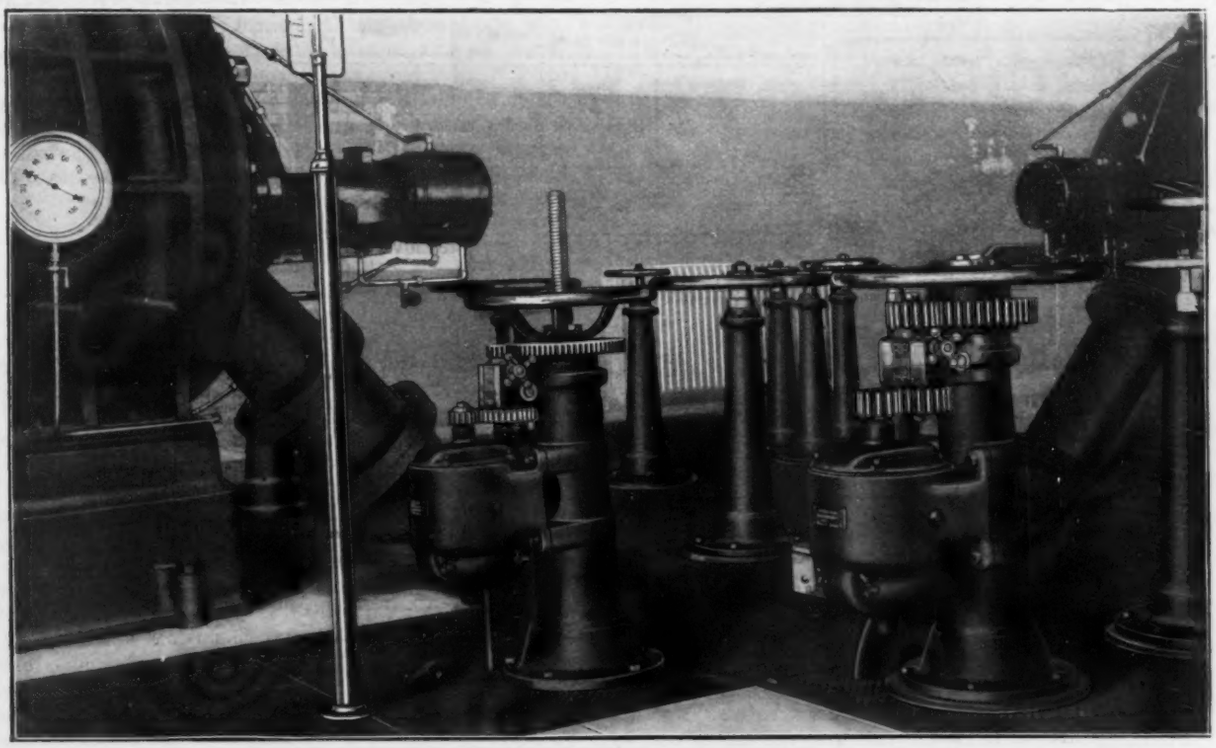


Fig. 1.—Chapman Electric Valve Installation for the Brooklyn, N. Y., High Pressure Fire Service.

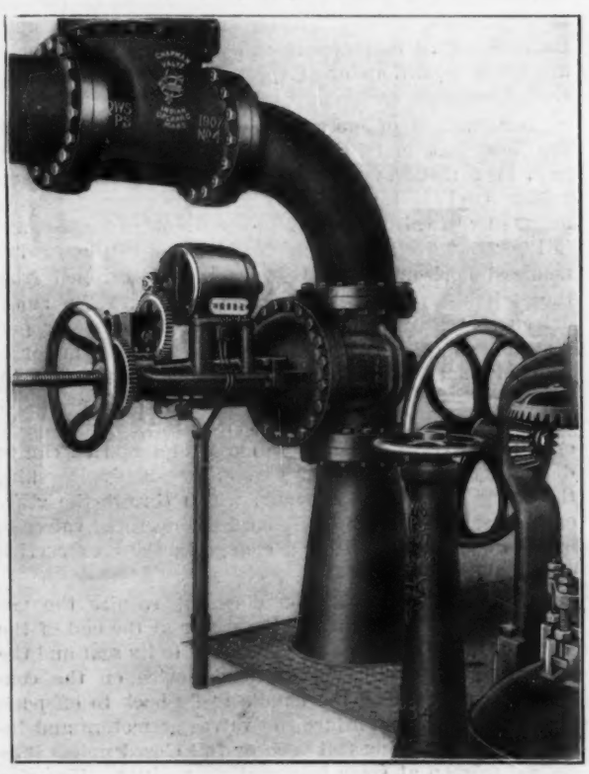


Fig. 2.—One of the New York Fire Station Valves with Horizontally Mounted Motor.

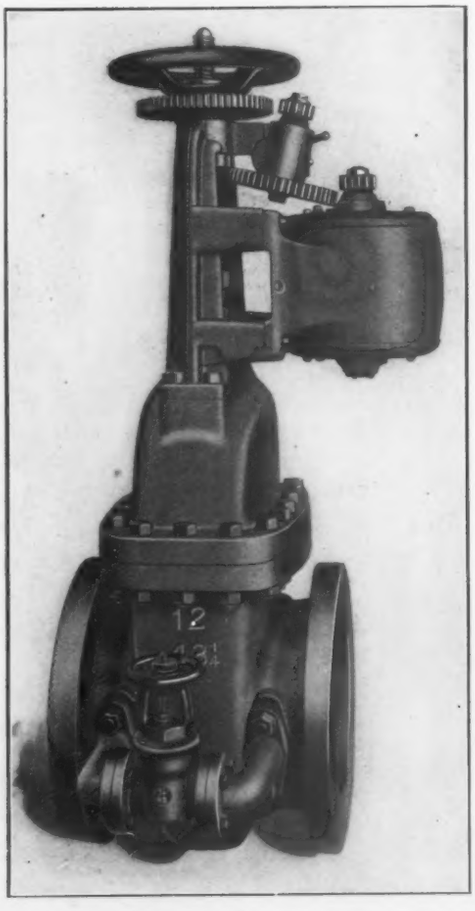


Fig. 3.—A Valve for Either Hand or Electric Operation, Showing Manner of Disengaging the Gearing.

quire, and it has been found advantageous to equip them with motor drive, which eliminates difficulty of operation. An important feature of the electrical operation of valves is that it dispenses with the large force of men necessary to open and close hand valves. For fire protection around mills and factories the valves can, by the use of thermostats and special circuits, be arranged to open with a given rise of temperature, or for any other purposes valves can be either opened or closed automatically—that is, independent of human agency—under any given conditions or at specified times, by clock controlled switches.

Installations of electrically operated valves in both the New York and Brooklyn high pressure fire stations have been made by the Chapman Valve Mfg. Company, Indian Orchard, Mass. In Fig. 1 the motor is shown mounted vertically on valves in the Brooklyn station, and in Fig. 2, a valve in the New York station, with the motor mounted horizontally. The valves are controlled from the switchboard in both plants, as are also the motor driven centrifugal pumps, thus giving the operator perfect control of each unit. The power of the motor is transmitted to the spindle of the valve through two intermediate gears mounted on a rocker shaft working in an axial plane. When it is desired for any reason to operate the valve by hand the motor and gearing can be disconnected, as shown in Fig. 3, by simply loosening the clamp on the rocker shaft, which throws the gears out of mesh. To adapt Chapman hand operated valves to motor drive requires only a change in the construction of the yoke and spindle.

The method of operation does not require the use of contact devices to cut out the motor at the end of the travel of the valve. The plug is forced to its seat and the motor stops, causing the overload device on the controller to release and the handle to fly back to off position. This does not injure the valves or motors and insures the valve being full open or full closed unless it is desired to stop at some intermediate position. The rise in current above normal is not great and is limited by the high resistance of the special high torque windings. A feature of the valve is the lost motion or hammer blow device, which allows the motor to bring the gears to speed, at which point the yoke nut receives a heavy hammer blow, starting the plug from its seat. This device enables the valves to be operated without the use of a large and expensive motor, which would necessarily require a considerable starting torque to start the plug from its seat by a steady pull.

Various forms of controlling devices are furnished, but the hand operated drum type controllers in most cases fulfill all requirements. They are made for mounting on the wall or the front or back of switchboards and have asbestos lined covers and fiber barriers between segments. The valve may be stopped at positions between full open and full closed by a tripping rod at the top of the controller. There are but three positions—off, open and closed—and in operating it is only necessary to throw the handle to open or closed position, as desired, and it is held there until released by the tripping coil, at the end of the travel of the valve, and is then returned to the off position by a strong centering spring. Where the valve is out of sight of the operator and it is desired to know its position, it can be equipped with contact devices to indicate this by lamps or other means.

Harron, Rickard & McCone's New Building.—Harron, Rickard & McCone, conducting the largest general jobbing machinery business on the Pacific Coast, have moved into their new and permanent headquarters at 139-149 Townsend street, between Second and Third streets, San Francisco, and now claim to have the finest machinery store in the country. The building is five stories, covering an area of 96 x 125 ft., thus providing 60,000 sq. ft. of floor space. A spur track runs parallel to the rear of the building, and a 25-ft. private right of way on the west side facilitates team deliveries Each floor is served with a traveling crane, thus greatly decreasing the cost of moving the heavy machinery which is handled by this firm. All the floors are well lighted and afford a splendid opportunity for a display of machinery. The office arrangement could not be improved upon, and the whole aspect of the place impresses one with an air of business. New San Francisco should certainly feel proud of the enterprise and confidence that has been shown by the re-establishment of this firm after the losses suffered in April, 1906.

The Cyclops Foundry Company.—This company, which was incorporated last September with a capital stock of $100,000, has purchased the former idle plant of the Monongahela Casting Company at Monongahela, Pa., including 5 acres of ground, buildings, foundry equipment, &c., located on the Monongahela Division of the Pennsylvania Railroad. The main foundry building contains 35,000 sq. ft. of floor space, boiler room, engine room, machine shop, chipping room, cleaning room, inspection room, coreroom and molding room, with pattern shop, storeroom, drawing room and office on the second floor. There is a detached building occupied by the pattern storage room, blacksmith shop, grinding room and brick core ovens. The machine shop is entirely new and is equipped with modern high speed machinery. The plant is electrically lighted and heated by a hot air system throughout. The new company intends to do a regular foundry business, making a specialty of machine molded castings of large size and weight. Its main office will be in Pittsburgh.

The United Engineering & Foundry Company, Pittsburgh, has added a new department for the building of forging machinery. A number or orders have already been taken. The company's extensive plant equipment enables it to furnish forging machinery of practically all capacities, and it is in a position to build board hammers up to 5000 lb. and high speed hydraulic forging presses from 100 to 12,000 tons, or special designs of any capacity. James A. Eden, Jr., formerly connected with the E. W. Bliss Company, Brooklyn, N. Y., is manager of the new department.

Iron and Coal Development in Mexico.

John Birkinbine, Philadelphia, contributes to the *Proceedings* of the Engineers' Club of Philadelphia a paper on the "Industrial Progress of Mexico." It presents much valuable information on various developments in that country in the past decade. Mr. Birkinbine presented before the same society "Notes on Engineering in Mexico" in 1893. The data in the later paper were gathered in connection with trips in 1905 and 1909. The following extracts are made from the pages which deal with iron and coal, the greater part of the paper being devoted to railroad and hydro-electric development:

The first Mexican journey was through sections then remote from railroads, and the one made a few months ago was distant from both roads and wagon roads, where the crude methods noticed in northern Mexico 27 years ago were found in use in the mountains of Oaxaca. Among these is the ancient Catalan forge, in which iron ore is fed to an open charcoal fire intensified by blast supplied by trompe, in which falling water entrains air. The bloom made in the fire is wrought under a helve hammer operated by a water wheel, and rewrought into bars or anchovies, which are marketed locally for from 3 to 5 cents, gold, per pound.

Some of the charcoal blast furnaces mentioned in "Notes on Engineering in Mexico" are also active, and the delicate castings from furnaces or iron puddled with pine wood are produced in the manner therein described. In several prominent cities scrap furnaces are operated with fuel supplied by gas producers and connected with rolling mills producing merchant iron, and foundries and machine shops furnish much of the repair and some of the new work required. As a rule, these industries are inclosed to prevent pilfering, and workmen are searched upon leaving the plant.

The Monterey Steel Plant.

At Monterey, in the State of Nueva Leon, a modern iron and steel industry was established in 1901 by the Cia. Fundidoro de Fierro y Acero de Monterey, S. A. The plant consists of one blast furnace, 18 x 80 ft., one Bessemer converter, three 35-ton open hearth furnaces, one composite mill to roll beams and shapes or rails, a merchant mill, spike works, foundry and machine shop and other accessories.

The blast furnace is fed with iron ores obtained in northern Mexico, the mixture ranging from 57 to 62 per cent. of iron, and closely averaging 60 per cent. iron. The coke used is one-half domestic, one-half foreign, and limestone is brought from nearby quarries. The domestic coke is produced from coal mined in the State of Coahuila, 200 miles from Monterey, and for smelting purposes, owing to the percentages of ash and sulphur, is mixed with cokes shipped from the United States and Europe to Tampico, and from thence 322 miles by railroad to Monterey.

Pig iron is cast in sand when not supplied as direct metal in ladle cars to the Bessemer converter (formerly a feature of the Pottstown, Pa., basic Bessemer plant), where it is partly blown, and is then carried by ladle to open hearth furnaces already charged with scrap. This duplex process accelerates the rate of conversion and augments the open hearth output. The cast ingots pass through soaking pits to the blooming and roughing mills, heating furnaces, and then to the composite trains. When visited, the mill, which has a capacity double that of the blast furnace and converting equipment, was running on an order for 20,000 tons of 85-lb. open hearth steel rails for the Mexican National railroads.

The general management is by Mexicans and most of the employees are natives, but department heads and many skilled workmen are foreigners. The labor basis at the plant is $1.50, Mexican, per day, equivalent to 75 cents, gold, but the number of employees exceeds that usually found in similar works in the United States. In 1907 nearly 18,000 tons of steel ingots were produced and 30,000 tons of manufactured steel, mostly open hearth.

Coal and Coke.

Practically all the domestic coal produced in Mexico is mined in the State of Coahuila, near the United States boundary, where about 1,500,000 tons are obtained annually. In 1907 the output of the Coahuila coal fields was 1,265,719 metric tons, about one-third of which was converted into coke. Exploitations have followed the mineral for 4500 ft. on a slope, and a shaft 930 ft. deep is in use. The towns, railroads and other improvements, for which these coal deposits are responsible, have transformed a desert country into an industrial center, most impressive to one who first knew the coal as a mere prospect.

The coal costs about $2, gold, per ton to mine, and, owing to the percentage of ash, washing is necessary to prepare it for coking, 20 to 25 per cent, passing away in the tailings; hence, 2 tons of coal as mined are necessary to produce 1 ton of coke, and this product commands about $6.50, gold per ton at the ovens.

But the fuel requirements of Mexico are more than double the output of the Coahuila fields, and domestic coal and coke compete with foreign fuel at the capital and other centers of consumption on the main plateau. The railroad freight rate from the Coahuila mines to the City of Mexico, 835 miles, is $4, gold; the same amount is charged on foreign fuel carried 264 miles from Vera Cruz, but in the latter case the fuel is elevated from sea level to the capital, 7500 ft. Fuel is, therefore, an important problem, and one purpose of the recent journey was to inspect prospecting work and reconnaissances in Oaxaca, which for one and a half years have been carried on under the direction of my son and associate, J. L. W. Birkinbine.

This is neither the time nor the place to discuss the details of the exposures made by the use of diamond drills and many exploratory workings in searching for coal and iron ore in the State of Oaxaca. But it may be of interest to state that three bituminous coal basins of considerable extent and large deposits of rich iron ore have been located, and that from one of the fields a dense coal, burning without smoke, is obtained, intimating a close approximation to anthracite. In this coal the volatile matter is low, but, as in all Mexican coals, the ash is high.

The Coahuila coals are classed as cretaceous, while the Oaxaca coals are believed to be in the Upper Jurassic formation. As the Oaxaca coals are found at altitudes ranging from 6000 to 7000 ft. above sea level and within 300 miles of the capital, they offer opportunities for cheap transports as compared with the Coahuila coals mined at an elevation of 1500 ft. and carried over 800 miles to the City of Mexico.

Reconnaissances demonstrate that, notwithstanding the mountainous character of the country, satisfactory railroad routes are obtainable which, besides bringing the Oaxaca coal into market connection, can be extended to the Pacific Coast.

While the mines of Mexico have been the cause of many extravagant statements, the country is rich in mineral, and most of the States are producers of importance. In the paper which this article supplements one of Mexico's great iron ore deposits was described, and a résumé of important mines or quarries would fill many pages of the *Proceedings*.

In the mountainous sections of Oaxaca and Guerrero covered in the last visit the mines produce gold, silver, copper, lead, antimony and other minerals. One lead smelter visited was equipped with American impulse water wheels working under a head of water of 60 ft. and operating American rotary blowers. This smelter was supplied with water jacket and metal tuyeres, and all of this installation had been transported on the backs of animals for 75 miles.

Peopled by a succession of generations, which for centuries have depended upon wood or charcoal made therefrom as fuel, little valuable timber remains, although the Oaxaca Mountains sustain a fair growth of gnarled and stunted trees; the herds of sheep and goats preventing the development of any decided new growth.

The La Follette Furnace, La Follette, Tenn., which has been leased by the La Follette Iron Company, is to be equipped with a Baker-Neumann rotary distributer of standard design for double skip hoists.

Electric Drives and Electric Control in Rolling Mills.

The November *Proceedings* of the American Institute of Electrical Engineers continues the discussion on the various papers on electric drives, electric control and other questions relating to the employment of electricity in steel works, as presented at the Frontenac, N. Y., meeting of the institute, June 30, 1909.* A résumé of the oral discussion at the Frontenac meeting has already appeared in these columns (*The Iron Age*, July 8, page 128). Below are given extracts from the contributions by letter:

Clark S. Lankton.

Mr. Specht says that in motor driven sheet mills the automatic control cannot be used to advantage, that it would do more harm than good. I wish to take the ground that a proper control for induction motors driving sheet mills is a very much desired feature. The advantages of control do not make themselves felt in the way it was first intended they should—that is, to smooth out the peaks. This is not practical, because, as Mr. Specht says, the fluctuating load is too quick for the automatic feature to act. The control is practical, however, in that it affords a large amount of protection.

A sheet mill has from 4 to 10 stands of rolls connected to the same shaft and each set of rolls is manned by a separate crew, each working independently of the other; hence the total load on the motor is made up of as many components as there are mills. Each unit requires power over and above its friction load, for but a relatively short period of the total time—that is, the actual time that iron is being passed through the rolls is short, say, one-eighth of the total time, or 3 hours out of 24. The different crews have no relation to one another, and, with several mills operating, combination loads of almost any magnitude might result. A motor of gigantic proportions would be required to meet every possible combination of peak loads which occur, although the square root of the mean square load would not require so large a motor. The advantage of a large flywheel reserve is apparent.

It has been suggested that a permanent amount of external resistance be inserted in the circuit of the motor secondary in order to obtain slip enough to allow the utilization of the flywheel energy. By this method the motor would run with lessened efficiency, not only at times of heavy load, but also at times of medium and light loads, which is by far the greater part of the time. The efficiency could be improved by installing a larger motor which would allow of less slip; but, on the other hand, it would have increased capacity and greater first cost.

It would not be so bad to sacrifice efficiency for a few seconds during a heavy jam, and with proper control it would be possible to hold the motor to the load until the load became excessive; then to allow the motor to give way and receive aid from the wheel. Thus the lower efficiency would be operative only occasionally and then for only a few seconds at a time. I have seen a sheet mill successfully operated in this way and no trouble from control for some period of time.

Let us give up trying to smooth out every fluctuation, but do not discard the control feature. Set the control to operate at a high load, however, and use it as a protection against the unusual peak rather than to level all peaks. If the source of supply is a little larger than the capacity of the mill, these smaller fluctuations will not be troublesome, and because of their frequency with the added number of mills the resulting load approaches a continuous load.

H. C. Specht.

The amount of flywheel effect of an induction motor, with wound rotor particularly, is fixed mainly by the design itself, and it is very difficult to add more flywheel effect unless the additional weight is placed on a smaller radius, where it is not as effective. Further, it is not often desirable for mechanical and other reasons to put all the flywheel effect in the motor. Assuming, for instance, that a motor has to drive certain machinery, and a specific flywheel effect is desirable, also that at some later date the machinery driven by the motor is to be changed or the motor has to be used otherwise; under these circumstances the flywheel effect first placed in the rotor may be no longer the right one. Then the motor would have to be changed, and in such a case it would be more desirable to make the motor a normal design in the first place without particular reference to the required flywheel effect. Any additional necessary flywheel effect is then secured by coupling to a separate flywheel. A further advantage of this arrangement is that the motor is relieved of any sudden shocks.

H. K. English.

Mention is made of the fact that the time required to accelerate or decelerate a heavy flywheel must not be overlooked. This is especially true in plate mill work, where it is often desirable to increase the rolling speed considerably after the first heavier passes are through. As an illustration, take the example used in the paper. Should it be decided to change at the end of the ninth pass, from 52 to 104 rev. per min. for the remaining 10 or 12 passes, the 120,000,000 lb.-ft.^{2} flywheel would obviously be out of the question on account of the time and energy required to accelerate it to 104 rev. per min.

Again it is an advantage, where possible, to have in the flywheel enough stored energy to clear the rolls should the power fail, or should the motor, for any reason, become momentarily inoperative. Referring once more to the data sheet [as given in the paper], pass No. 9 represents some 11,700,000 ft.-lb., while a 20,000,000 lb.-ft.^{2} flywheel running 52 rev. per min. has but 9,250,000 ft.-lb. stored energy. Should the power fail just as the steel is entering for pass No. 9 the rolls would not be cleared, making it necessary to loosen the rolls, reverse the motor and back out the steel. This consideration is of more importance in a rail mill with a number of motors in a train, and large quantities of steel in different stages of completion in the mill at one time. I mention these two points to emphasize the fact that the choice of a flywheel for any given installation will be governed more by an all-round practical consideration of the case in hand than by any mere efficiency calculations.

There has just been completed a series of tests on an electrically driven rail mill which has recently been put in operation, and it has been very gratifying to see how closely the test values check the original calculations both as to power required for the several passes and as to motor performance. In view of this fact, and the successful record this mill is making, it would seem that Mr. Specht is scarcely justified in assuming that careful study has not been given these first installations.

Arthur C. Eastwood.

I believe attention should be directed to the conditions under which controllers must operate in a steel mill. I refer to the controllers described by Mr. White and Mr. Henderson in which a separate series relay is associated with each contactor in a controller, the closure of each successive contactor being governed by the current flowing through the motor, and each series relay being susceptible of individual adjustment.

In steel mills I believe it is common practice when records are in view to doctor the controller relays with bolts, nuts and wrenches. In other words, under mill conditions a controller designed automatically to limit the current input of a motor may in a few seconds lose all semblance of current limit acceleration, the cutting out of the resistance being governed solely by the time element of the contractors or magnetic switches. Further the larger the number of adjustments provided, the greater the chance for maladjustment where uneducated and electrically unskilled rollers, table men, shear men, millwrights, &c., have access to the controller, and where the adjustments are purely mechanical, consisting in weighting a plunger or tightening a spring. Even in the

* The following papers read at the Frontenac meeting have appeared in *The Iron Age:* "Power Requirements for Rolling High Carbon Steel of Small Section," July 1, p. 12; "Rolling Mill Motors," July 8, p. 111; "Electric-Driven Rolling Mills," July 8, p. 129; "Electric Power Problems in Steel Plants," September 9, p. 764; "Electric Control for Rolling Mill Motors," September 9, p. 778.

hands of a skillful electrician to secure accurate adjustment of a controller having a relay on each switch a recording ammeter is almost a necessity.

As to the advantage found by Mr. Henderson for the multiple relay system of acceleration—that is, the ability so to adjust the relays as to interpret the commutation curve of a motor—it is conceivable that this is an advantage under some conditions but not one which is likely to appear in a steel mill. A steel mill engineer would hardly install a motor so near the limits of commutation that special provisions would be required to help it out, and if such a motor were inadvertently installed it should be very promptly torn out and a motor installed better suited to conditions.

There is another system of automatic relay acceleration not described by either Mr. White or Mr. Henderson, which was specifically designed to meet conditions as they exist in steel mill service, and it is extensively used in many of the largest steel works in the country. In this system only a single accelerating relay is employed. Hence there is but one adjustment; and accurate adjustment as to maximum accelerating current can be determined by the use of an ordinary indicating ammeter. The relay has a single winding of coarse wire, controls only a single pair of contacts, and in service is ordinarily inclosed in an iron box, which can only be opened by a key in the form of a special horseshoe magnet with which only those properly qualified to make the adjustment are provided. This prevents tampering with the adjustment on the part of those not properly equipped to do so.

Further, the adjustment for varying the maximum accelerating current is electrical and not mechanical. Consequently an unskilled worker who would not hesitate to hang a weight on the ordinary form of relay is very likely to keep hands off, since he will hesitate to tamper with electrical connections.

The adjustment is obtained by varying the portion of the total motor current which passes through the winding of the relay, and is accomplished by shunting the winding of the relay. The constants of the relay itself remain fixed. It will always lift its plunger when a certain definite current flows through its winding. Assuming this current to be 50 amperes and the desired maximum motor current to be 100 amperes, the relay will be so shunted that one-half of the motor current will pass through its windings. If the desired maximum motor current be 200 amperes the shunt will be so adjusted that one-quarter of the total motor current will pass through the winding of the relay.

This method of shunting the winding of the relay not only provides means for adjusting the maximum accelerating current in case of a given motor and controller, but also permits of adapting a standard relay for use with motors varying widely in capacity. In an equipment installed in one of the large steel works of the country, embodying some 65 automatic magnetic controllers for motors varying in size from 25 to 250 hp. duplicate relays were used in all of the controllers, the adjustable shunt in each instance adapting the relay to operate at the required maximum motor current. * * *

As to the Hulett unloader, which was described by Mr. Henderson as offering particular advantages for automatic control, the writer can speak with some authority as he designed and installed the controlling equipment for the first electrically operated Hulett unloaders in 1902 and 1903. On the first Hulett unloaders (installed at Conneaut, Ohio) the machines were driven throughout by steam and hydraulic power. The next machines (the first three installed on the Lackawanna Steel Company docks at Buffalo, N. Y.) were driven electrically with the exception of the bucket-closing and rotating mechanisms, which were operated by means of hydraulic cylinders. This necessitated mounting on each machine a motor-driven pressure pump operating at 1000-lb. pressure, a motor-driven air compressor, an air-hydraulic accumulator, and an elaborate system of high pressure piping, swivels, valves, &c., which was a prolific source of trouble not only in itself, but on account of damage to electrical apparatus, which occurred through frequent leaks in the hydraulic system.

Hydraulic power was selected for the operation of the bucket because of the absolute necessity of limiting the torque or pull which occurred in closing and rotating the bucket. The bucket of the unloader is suspended from a structural leg some 40 ft. in length. In scraping ore from between hatches, or in case the bucket should entrain more ore than it could hold, or in case the bucket should foul a stanchion or other obstruction, obviously the torque or pull must be limited, as the bucket has a leverage of some 40 ft. on the frame of the machine, and a wreck would result if a definite maximum pull were exceeded. An electric motor with its ability to increase its torque to perhaps 10 times full-load value before stalling appeared altogether unsuited to the purpose.

After experimenting with a number of other schemes a form of controller was devised by the writer which gave to the operation of a motor substantially the characteristics of a hydraulic cylinder. In this controller a series relay was introduced, which weighed the load, and when a given normal current was exceeded, automatically cut resistance into the motor circuit, thus limiting the current, and consequently the torque, to a safe maximum value. The arrangement was such that current would not be cut off from the motor when an overload occurred, but the current would be automatically limited and the current limiting resistance would be automatically cut out when the load was relieved. This arrangement successfully displaced the hydraulic cylinder and all subsequent Hulett unloaders have been similarly equipped. The Hulett unloaders on the docks of the Indiana Steel Company at Gary are equipped in this way, and are also equipped throughout with the system of current-limit acceleration.

The Dodge Mfg. Company's Branches.

Service is one of the chief characteristics of the Dodge Mfg. Company, power transmission engineer and manufacturer of the Dodge line of transmission machinery, Mishawaka, Ind. This is largely based upon the maintenance of large stores and warehouses in many of the principal cities of the country, in connection with expert engineering departments, which make possible immediate deliveries and the solution of knotty transmission problems without delay.

From time to time the Dodge Company has enlarged and extended this service until it took in nine points, Boston, New York, Brooklyn, Pittsburgh, Philadelphia, Cincinnati, Chicago, St. Louis and London, England. Announcement has just been made of the addition of Minneapolis, Minn., and Atlanta, Ga., to the list. These two branches will serve the two-fold purpose of local stores and distributing stations for the Northwest and the Southland. The Minneapolis store is located at 202-204 Third street, South, and the warehouse is at 312 to 320 First street, North. The agency arrangement with the Minneapolis Steel & Machinery Company has been discontinued. Burke Richards, former resident salesman at Cleveland, Ohio, has been promoted to be manager of the Minneapolis branch. The Atlanta warehouse is located at 54 Marietta street. S. L. Dickey, resident salesman at that place, has been appointed manager. No change has been made with any of the agency connections in the South.

The Montreal Steel Works, Ltd., Montreal, Canada, is to establish a new steel plant at Longue Pointe, the property for which has been purchased. The site acquired extends from the river to the tracks of the Canadian Northern Railroad. It is not the intention to locate all the company's works at Longue Pointe, but the new plant is to be operated in conjunction with its works in Pointe St. Charles. In the latter place the company manufactures four or five different lines, and it is the intention to concentrate two or three of these in the Longue Pointe plant as soon as it can be completed.

A 16-in. Lodge & Shipley Lathe with Multiple Stops.

The feature of adjustable multiple stops for the longitudinal and cross feeds on the Marvel lathe, made by the Lodge & Shipley Machine Tool Company, Cincinnati, Ohio, and described in *The Iron Age* July 29, 1909, has now been applied to the company's 16-in. patent head lathe. The Marvel lathe is for turning pieces of relatively small diameter in proportion to their length. For example, the two sizes illustrated in the earlier issue were capable of taking pieces 2½ in. in diameter by 36 in. long and 4 in. in diameter by 48 in. long, respectively. Now the multiple stops are available on lathes capable of turning larger diameters. For example, the one illustrated in Fig. 1 will take work up to 16 in. diameter. Where these stops have their important value is in the production of duplicate pieces where rapidity and accuracy are essential, enabling the operator after once making proper setting for the first piece, to reproduce any number of parts without stopping to caliper diameters or measure distances between shoulders. Five stops of each kind are regularly furnished, so that any number of diameters up to five on a single piece and the same number of lengths may be quickly turned.

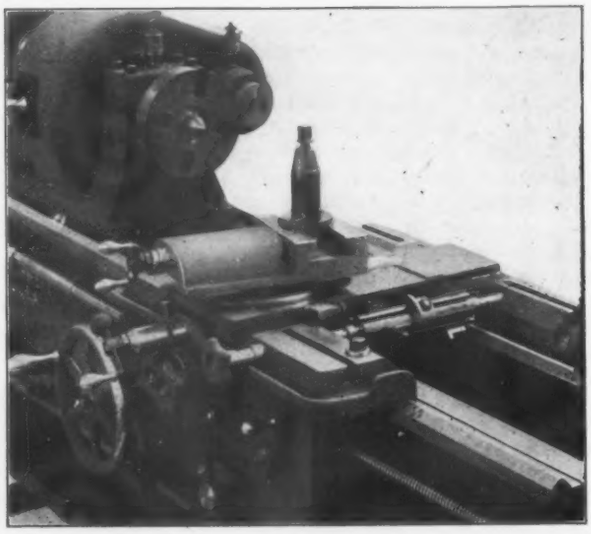


Fig. 3.—A Detail of the Stops for the Cross Feed of the Carriage.

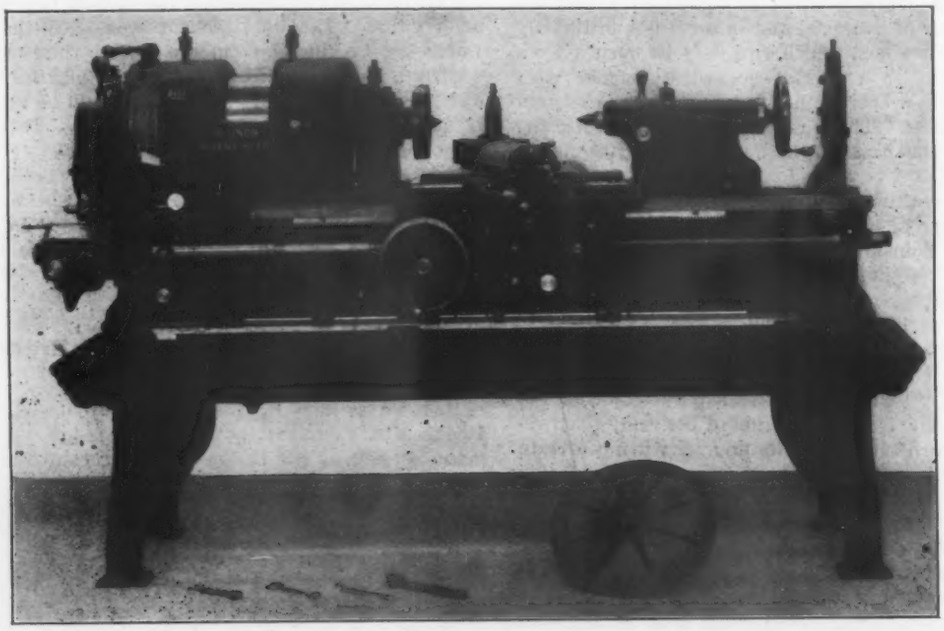


Fig. 1.—A 16-In. Patent Head Lodge & Shipley Lathe with Multiple Stops for the Cross and Longitudinal Feeds.

The longitudinal stops are adjustable along the dovetailed upper sliding surface of the stop bar, which is carried along the front of the lathe bed, beneath the apron. The entire bar, with stops, is shown in Fig. 1. Fig. 2 shows a detailed view of that portion of the longitudinal stop mechanism beneath the headstock. The lead screw is divided beneath the headstock and there driven through a jaw clutch, clearly shown in Fig. 2. The left half of the clutch is fixed and the right half is movable against a spring contained in the sleeve fitted over that portion of the lead screw. When the carriage feeds up to one of these length stops it moves the stop bar, disengaging the clutch at the lead screw, thus throwing out the feed. As soon as the latch at the lower left hand corner of the apron is raised by the operator the spring throws the jaw clutch and the stop bar back to their original positions, thus re-engaging the feed. The longitudinal feed then remains in until thrown out by the next stop.

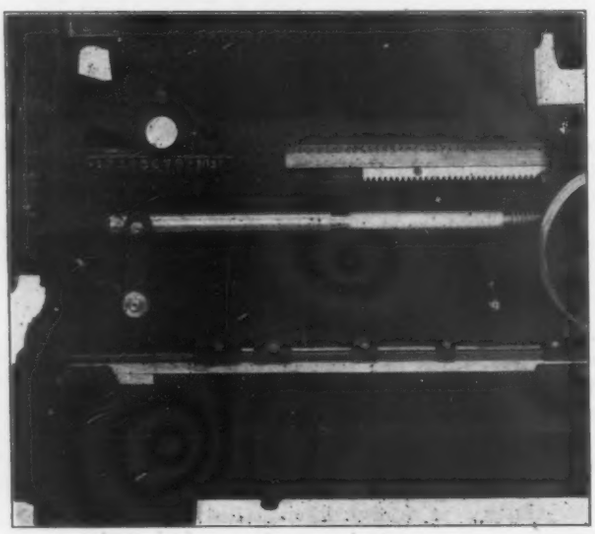


Fig. 2.—A Detail of the Longitudinal Stops, Showing Their Action in Disengaging the Lead Screw.

Two special features of these longitudinal stops are that the stops are so arranged that they can be set telescoping when required, so that even the shortest shoulder lengths can be obtained, and that these stops do not depend for their accuracy upon the tripping of a clutch. After the length feed is thrown out automatically the operator by about 0.003 in. hand movement of the carriage brings the stop bar up against an absolute stop, shown just below the jaw clutch, so that different lengths are duplicated easily.

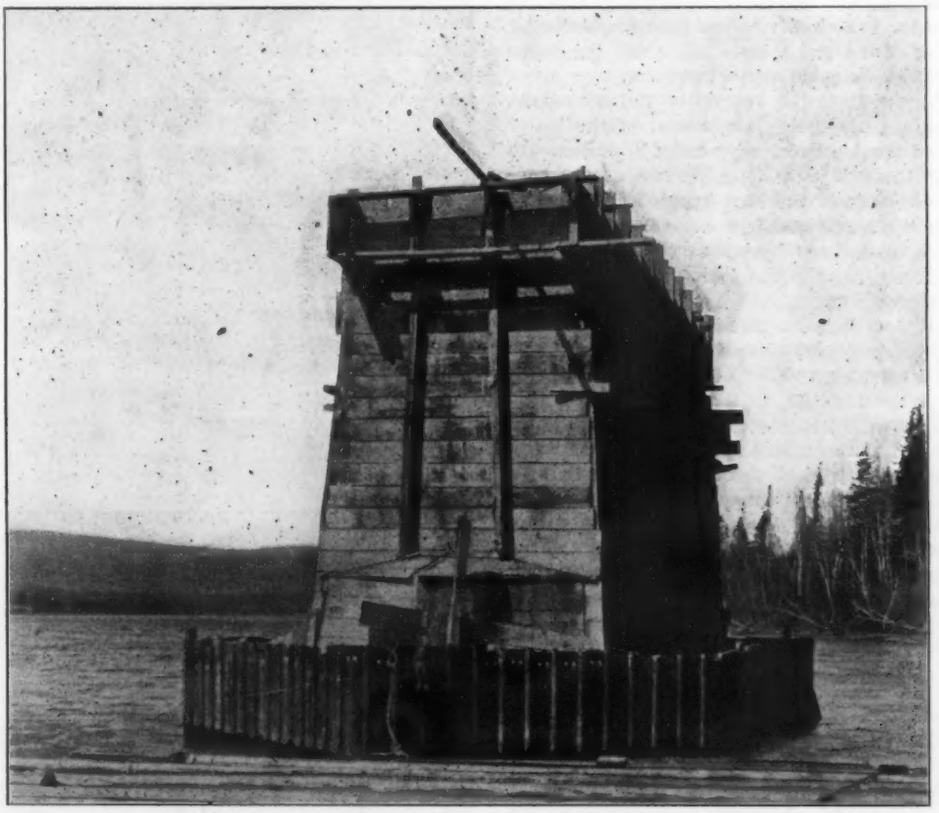
The diameter stops are best shown in Fig. 3. They are carried in T-slots milled in the rotating bar, which

is parallel with the bridge of the carriage. Each stop can be set to any desired position in its slot, and the entire bar is easily rotated by the star knob at the front of the apron, thus bringing the different stops successively into position, where they will be engaged by the lug on the cross slide, as the tool is fed up to the cut.

U. S. Piling in Bridge Building.

St. Louis River Viaduct—Interstate Transfer Railway Company, Minnesota.

There is now under construction across the St. Louis River, near New Duluth, Minn., a steel viaduct and drawbridge which will be an important link in connecting the tracks of two terminal systems. The combined trackage when completed will form the most complete and perfect terminal and transfer line which could be laid out at the head of the Great Lakes. The new line runs from Adolph, Minn., on the Duluth, Missabe & Northern Railway, a short distance north of Duluth, around to the St. Louis River, crossing the same near New Duluth, and thence across Wisconsin to Allouez Bay, on the shore of Lake Superior, crossing and connecting with every railroad line which runs into both Duluth and Superior except the Duluth & Iron Range Railroad.



East Pier of the St. Louis River Viaduct for the Interstate Transfer Railway Company near New Duluth, Before Removing the Forms and Cofferdam. The Latter Is of 12-In. 40-Lb. U. S. Steel Sheet Piling.

The plans contemplate a double-deck steel structure with a total length of 1889 ft. between abutments. This will carry the two railroad tracks of the Interstate Transfer Railway Company on the upper deck, with sidewalks for pedestrians, and two street car tracks with roadways on the lower deck. The base of rail of the railroad tracks on the upper deck is approximately 53 ft. above low water in the river and the ground on the west side of the river is only about 1 ft. above low water, being a marsh practically level with the surface of the river at ordinary stages of water. The main span, the center of which is 340 ft. from the east abutment, is a pivoted drawbridge 300 ft. long, of the parallel chord Warren truss type with intermediate bottom chord suspenders, the upper and lower railroad tracks being in close relation to the top and bottom chords. The weight of steel in the draw span will be about 1072 tons. The approaches consist of 14 70-ft. plate girder spans, alternating with 30-ft. plate girder spans, forming towers, there being altogether 13 of the latter. The end spans at both abutments are 90-ft. plate girders.

The foundations will consist of concrete piers supported on piles. In the construction of the easterly pier of the draw span, now complete, the Carnegie Steel Company's United States steel sheet piling, in units 12 in. wide, weighing 40 lb. to the square foot, and in lengths of 40 ft., was used, a quantity of about 110 tons being required. A single wall of piling was driven, reliance being placed upon the water tight qualities of the interlock instead of using the customary bank of puddle or berm around the exterior of the cofferdam, the current of the river being so great that it was doubtful whether any material could have been retained for this purpose without recourse to an external wall of sheeting. At the outset this method of construction was criticised by various contractors and engineers who regarded it as likely to be a failure, nevertheless the work was carried out along the original lines contemplated with entire satisfaction and success.

Preliminary work on the pier was done during the winter of 1908; the river was then 26 ft. 3 in. deep at the site of the foundation, which is in the edge of the main channel. For driving the steel piling a cast iron driving hood was procured to fit the leads of the pile driver, shaped to fit the piling on the underside, and having a recess on top for a wooden striking block or cushion. Strips of fir 36 ft. long, sawed 1½ x 1⅜ in., were provided for driving with the steel piling in the interlocking groove so as to form an absolutely water tight joint after some hours' immersion in the water had caused the wood to swell, but these strips were found to be somewhat too large, 1½ x ⅞ in. being preferable. The dimensions of the pier are 19½ ft. wide by 44 ft. long to the beginning of the nose; the nose itself is 9½ ft. long. The piling was started at the nose, and the closure was made on the point of the latter with a right angle piece. The driving had been so carefully done that this last piece entered and was driven with perfect ease. Previous to the driving of the sheet piling the bearing piles for the foundation had been driven inside the area inclosed by

the cofferdam, and it was attempted to put in the top set of braces, lower the water by pumping for the next set of braces and so work down to the bottom. This plan failed, as a 10-in. centrifugal pump was unable to lower the water sufficiently fast, and the services of a diver were then utilized to cut off the bearing piles at the ground level. After this was accomplished the various sets of bracing were built up in order from the bottom up, being framed at the river surface and sunk in succession by the weight of those above. At this time the cofferdam was still leaking very badly, and two sleigh loads of horse manure were therefore dumped in the river outside the dam. Within an hour after this material was placed the water inside the cofferdam was 12 ft. down from the surface of the river and the pump was shut down for the dinner hour. On resuming work after dinner it was found that the water had raised about 2 in. It was completely pumped out in the afternoon, and from that time on it was only necessary to run the pump for a few moments at a time. The centrifugal pump was discarded and a 4-in. Emerson vacuum pump substituted. After the footing of the pier was in place and the forms set up, it was found desirable to use the pump only about once a day. On reaching the bottom of the cofferdam, the discovery was made that a great deal of the water which had caused trouble had been coming in underneath the sheet piling, through a pocket of gravel at the nose of the pier; the balance of the area exposed consisted of red clay with a little quicksand in one corner, but this gave no trouble, as the manure appeared to have been drawn in sufficiently to stop the leak. The steel walls were almost perfectly dry.

It is expected that the same sheet piling will be pulled and used again for the west pier of the drawspan; also for the central pivot pier and for 60 small piers, constituting the foundations of the 30-ft. towers crossing this swamp. It is interesting to note that neither the chief engineer nor any of the men employed had ever had any previous experience with steel sheet piling, and that in spite of this they succeeded in constructing a water tight cofferdam in a rather unusual depth of clear water, so far as the past history of single wall timber or steel sheet piling is concerned, at a cost considerably below that involved in the use of any other method. The entire design and direction of the work is under the direct supervision of H. L. Dresser, chief engineer.

Seventy-Ton Steel Gondola Cars.—The report that the Pennsylvania Railroad has ordered a large number of 70-ton steel gondola cars is denied by A. W. Gibbs, general superintendent of motive power, who says that no cars of this capacity have been designed at Altoona. The *Railroad Gazette* learns further from Mr. Gibbs that "the gist of the whole subject is, that in designing cars of large cubic capacity for the coke trade it was considered that if these same cars could be fully loaded with coal on their trips to the lake and carry a corresponding weight of ore on the return trip very considerable economies would accrue. The capacity of the two trucks is but 161,000 lb., depending, primarily, on the axle, and also on other parts of the truck, such as column bolts, arch bars, springs, &c. As the car itself weighs about 46,000 lb., this would make the allowable load between 115,000 and 116,000 lb. The bodies of the cars are strong enough for the heavier load, but until the truck has been entirely redesigned there will be no such cars in service and none has been ordered. Incidentally, it develops that while the main line is now adapted to such cars, considerable reconstruction of some of the branch roads and private sidings would have to be made before such cars could safely be used."

The Bureau of Navigation of the Department of Commerce and Labor, Washington, D. C., reports that 93 ships, both sail and steam craft, were built and officially numbered in October. Of this number more than one-half were constructed for service on the Atlantic and Gulf coasts. Only six were steel steamers. The vessels were small, their total being only a little over 4000 gross tons.

New Buffalo Exhausters.

A new steel plate planing mill exhauster with which two different types of wheels may be employed, built by the Buffalo Forge Company, Buffalo, N. Y., is shown in Fig. 1. Either equipment is adapted for removing shavings, sawdust, refuse from woodworking machines, refuse from buffing or emery wheels and other abrasive processes. Other applications are the handling of cotton, wool and other textiles, spent tan bark in tanneries,

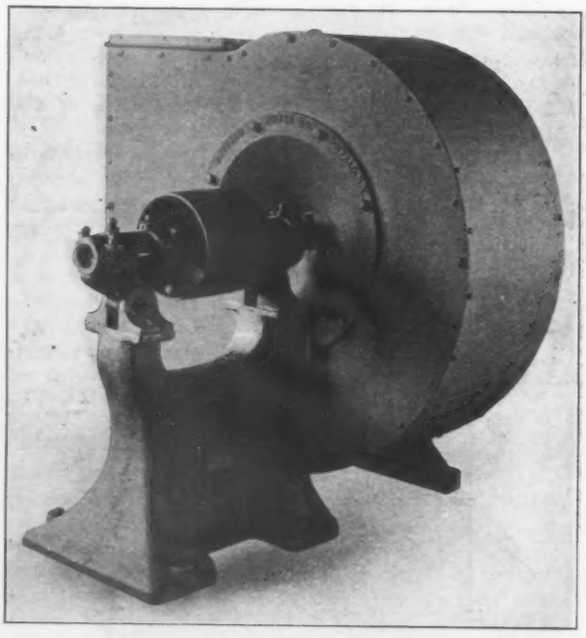


Fig. 1.—The Buffalo Steel Plate Planing Mill Exhauster with Adjustable and Reversible Housing.

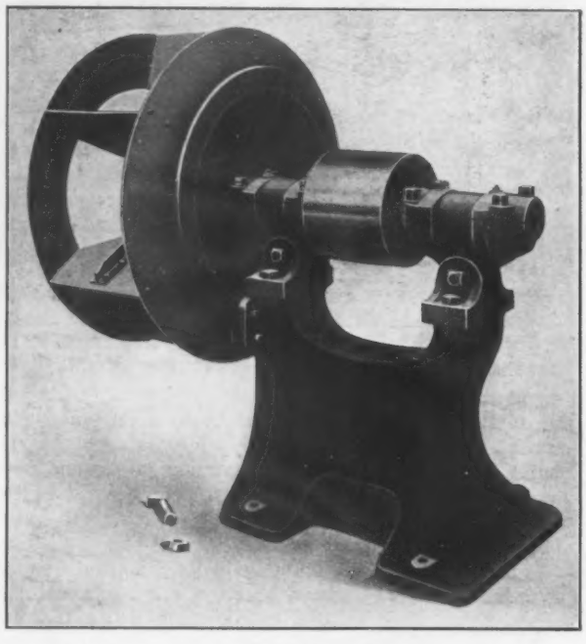


Fig. 2.—The Exhauster with the Housing Removed.

long stringy shavings in planing mills, grain, &c.—in short, any form of pneumatic conveying. For such uses a wheel of special design which does not catch and hold the material passing through the exhauster is required. The exhausters are also adapted to the more ordinary uses of removing gases, acid fumes, smoke and gases generated by fires in forges and furnaces.

The fan has a reversible housing, adjustable to either hand and to any direction of discharge. All the necessary adjustments are made in a few minutes and on the outside of the housing. To change the direction of discharge the bolts in the ring of each pedestal are loosened, then the housing is revolved until the discharge points

in the direction desired. To change the hand these bolts are removed, the set screws holding the fan to the shaft loosened and the pedestals are shifted. The change is quickly and easily accomplished.

The advantages of this fan are evident. In one fan is the ability to meet any requirement, of hand or of discharge. Cross belts are entirely unnecessary. Sharp angles are completely avoided. To users this equipment is desirable, because it is frequently necessary to change the position of the fan, due to increase of business and the necessary alterations and enlargements of the building. The fan can be quickly adjusted to the new position and will meet the requirements equally with a fan of the same capacity built especially for the place. Dealers save in storage space, as it is not necessary for them to carry in stock fans of each hand and angle of discharge.

The housing is heavy rolled steel plate, securely bolted to a steel frame. The smoothness of this material offers but little resistance to the air movement, reducing friction to a minimum. The pedestals are of heavy cast iron, reinforced and equal to any service of the fan.

The fan wheel shown in Fig. 2 is mounted upon a heavy cast iron spider or hub. The arms to which the vanes or blades of the wheel are securely riveted are of T steel cast into the hub, insuring strength and rigidity. The vanes are of heavy plate steel and are riveted not

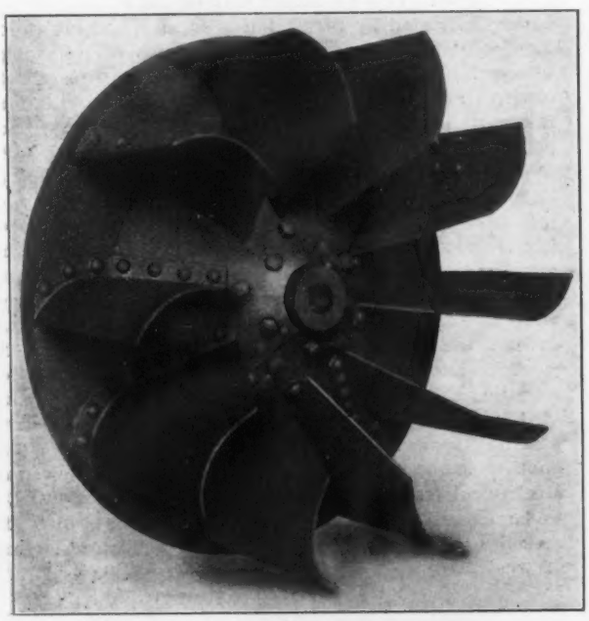


Fig. 3.—A Special Form of Wheel for Slow Speeds.

only to the arms, but also to the heavy steel plate side flanges. The construction of the wheel is such that it insures strength, and also the maximum intake and discharge of air. Every wheel is tested for both strength and balance beyond that required, so that a smooth, easy running wheel is assured. The fan is overhung on a shaft of hardened steel, running in long journal double ring-oiling bearings. These bearings operate smoothly, with little attention beyond an occasional oiling.

The Buffalo slow speed, low power exhaust fan is similar to the one just described, except in the form of its wheel. By virtue of its design it is claimed to do the same work as a standard exhauster of the same size, with more than a 10 per cent. reduction in the consumption of power, although it runs at 20 per cent. less speed. In addition to this saving of power, the wear and tear, particularly on the bearings, is greatly reduced, as well as vibration and all belt troubles. This design of blast wheel is the result of extensive and exhaustive tests to determine the style of wheel with the highest efficiency.

The blast wheel, shown in Fig. 3, is built of heavy steel plate. Instead of the spider usually used to support the vanes or blades, a heavy steel plate cone is used. The advantages of this cone are apparent. The apex being at the inlet, the material entering the fan strikes the cone and its direction is gradually changed without the loss of momentum due to sudden changes in direction. This cone being perfectly smooth offers no obstruction to the free passage of the material, as do the arms of a spider; hence there is no chance of clogging. The forward curved vanes are securely riveted to this cone, and also to a heavy steel plate flange at the back or side opposite the inlet, insuring strength and rigidity. Another feature is the extension of this flange beyond the tip of the vanes. This prevents any material thrown from the vanes coming in contact with a dead surface, like the side of the housing, where its progress would be retarded. Instead it is thrown against this flange revolving at the same speed, its momentum is maintained and the material is thrown clear into the cutlet.

This fan is overhung on a shaft of hardened steel, running in long journal bearings similar to those already described, and similarly supported upon a heavy cast iron pedestal, which maintains the alignment of the fan.

Extensive By-Product Coke Plant for South Bethlehem, Pa.

Arrangements have been practically concluded between the Bethlehem Steel Company and German interests, whose identity is not made public as yet, for the erection of by-product coke ovens at South Bethlehem, Pa., adjacent to the Saucon open hearth plant of the company. It is expected that construction work will begin at an early date and the coke oven company agrees to supply coke to the Bethlehem Steel Company within two years. The plans call for 450 by-product ovens and the investment, which covers also the necessary by-product buildings and equipment, will be about $1,000,000. The output of coke will be about 3000 tons a day. This will not be sufficient for the furnaces of the Bethlehem Steel Company, including the three large ones now under construction, and it will still be a buyer of coke in the open market. The German interests have under consideration the ultimate extension of their plant so as to supply other furnaces in the Lehigh Valley, ample arrangements having been made for coal supply, though details of this transaction are withheld at present.

The Bethlehem Steel Company is making good progress with its new blast furnace work. The first of the three large furnaces is expected to be ready for blast in February. Hoover & Mason, Chicago, have the contract for the building of two additional sets of ore and coke bins adjoining those of the existing blast furnace plant.

The Bailey Patent Furnace.—George J. Hagan, 401 People's Bank Building, Pittsburgh, engineer and contractor for furnaces and gas producers, has been appointed sole agent for the Bailey patent furnaces, of which W. H. Bailey, general superintendent of the Whitaker-Glessner Company, Wheeling, W. Va., is the exclusive owner. The patents cover stoker combination pair and annealing furnaces. A recent installation of a sheet and pair furnace of this type in the plant of the Thomas Steel Company, Niles, Ohio, showed such marked efficiency, turning out a greater output with less fuel, that it has been decided to rebuild the remaining furnaces to conform to the new design.

The B. F. Sturtevant Company, the large fan, blower and engine manufacturer, Hyde Park, Mass., has established in its works a branch of the Massachusetts Savings Bank Insurance. The work is in charge of an instructor, who goes among the men explaining the necessity and value of systematic saving. A large number of the employees have taken advantage of this proposition, arranging for insurance to amounts varying from $500 to $1000. Such movements for employees' welfare are along progressive lines for bettering the conditions of all concerned in the industrial world.

"Slag Inclosures" in Steel.*

How They Are Produced and How They May Lead to Failures.

BY WALTER ROSENHAIN, TEDDINGTON, ENGLAND.

The object of the present paper is to call attention to the importance of further and closer study of the influence which is exerted upon the strength and safety of steel by the presence within its mass of numerous inclosures of non-metallic bodies which may conveniently be grouped together under the term of "slag inclosures." These inclosures have been studied to some extent by a number of metallurgists, including H. Le Chatelier, J. O. Arnold, T. Andrews, J. E. Stead, Captain Howorth, H. Fay, E. F. Law and the present author, and some of these have drawn attention to the fact that failures in steel objects have repeatedly arisen from the presence of these inclosed impurities. While some metallurgists appear to regard these inclosures as practically harmless, the present writer has repeatedly expressed the opinion that they are dangerous and recent experience of some definite cases of failure arising from the effects of slag inclosures lead him to bring the subject before the International Association.

The detection of the presence of slag inclosures in

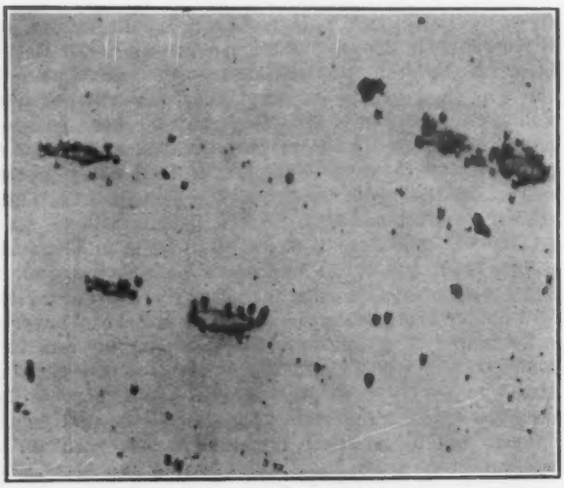


Fig. 1.—Slag Inclosures in a Section of Gun Steel. Specimen Not Etched. Magnification 100 Diameters.

steel is comparatively easy, the most direct method being an examination of a micro-section of the material. In the case of material which has been rolled or forged it is, however, almost essential that the section examined should be a longitudinal one; i. e., cut along a plane parallel to the direction of general extension, such as the direction of rolling in a bar or a rail, since in transverse sections the inclosed impurities appear as very minute dark spots which may easily escape notice.

Typical Forms.

The microscopic appearance of some typical forms of slag inclosures are shown in Figs. 1 to 6, which are all taken from objects which have failed in service as a result of the presence of an excessive quantity of these inclosures. Figs. 1 and 2 represent sections showing these inclosures in the steel of a large gun† as they appear when the steel has been polished, but not etched. At least two types of inclosures are seen in these sections; one is the "dove grey" sulphide of manganese as described by Arnold, Stead and others, but the other is not so readily identified. It makes itself apparent in the form of numerous black patches, generally very minute, but very widely scattered. In many cases there is no doubt that these patches are simply holes from which

* A paper read at the meeting of the International Association for Testing Materials, Copenhagen, September, 1909. The author is connected with the National Physical Laboratory at Teddington.

† The steel of this gun has already been fully described by the present author in a paper on "The Study of Breakages" at the British Association for the Advancement of Science, Dublin, 1908. Reprinted in *Engineering*, September 4, 1908.

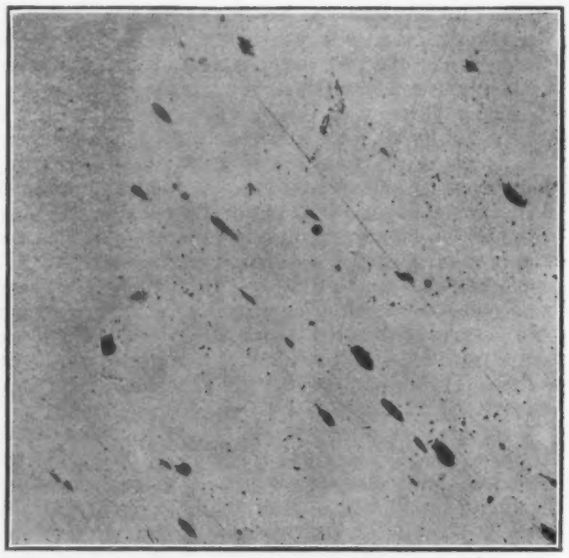


Fig. 2.—Slag Inclosures in Gun Steel. Specimen Not Etched. Magnification 100 Diameters.

the brittle material has been torn during the polishing process, but in other cases the dark substance itself is still present. This substance may be the silicate of manganese indicated by Stead, but it is also possible that it may consist either of oxides or silicates of iron. It is interesting to note that in this particular case the inclosures are not segregated in the ferrite areas, but are fairly uniformly distributed through both ferrite and pearlite.

Figs. 3 to 6 represent the appearance of the slag inclosures in sections of a rail which failed in service. In this case they are both very large and very numerous. Fig. 3 shows inclosures of sulphide of manganese with a large number of black patches and holes corresponding to a second type of inclosed impurity. Fig. 4 shows a very large inclosure consisting principally of sulphide of manganese, while Fig. 5 shows this same area after the specimen has been etched with picric acid, this latter view revealing the manner in which the slag inclosure is situated in the centre of a relatively wide band free from pearlite (sometimes called a "ghost"). Fig. 6 shows another example of a slag inclosure in the same rail. Mechanical tests carried out on this material showed it to be excessively weak in those directions which the presence and shape of the inclosures indicated as lines of weakness.

Sulphide of Manganese.

The observation that the inclosures of sulphide of manganese are usually closely associated with the other slag inclosures present, the two often appearing together in one lump or globule, places another means of examination at our disposal. The distribution of sulphide

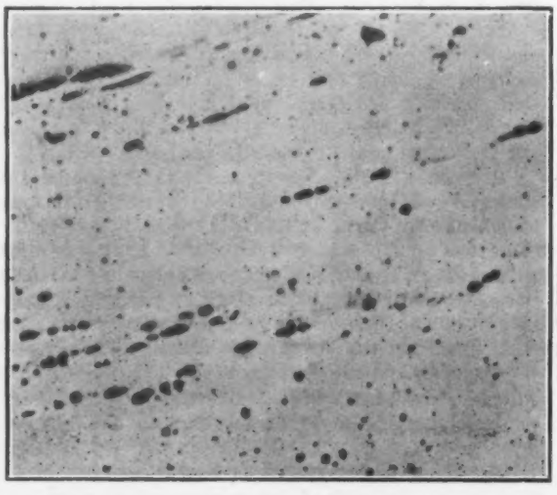


Fig. 3.—Slag Inclosures in the Longitudinal Section of the Web of a Rail Which Failed in Use. Specimen Not Etched. Magnification 100 Diameters.

Fig. 4.—Large Slag Inclosures (Principally Sulphide of Manganese) in a Longitudinal Section of a Steel Rail, Specimen not Etched. Magnification 100 Diameters.

of manganese is readily ascertained by taking what is known as a "sulphur print." The most convenient method for this purpose is that suggested by Baumann, who applies a sheet of photographic bromide of silver paper to the steel after moistening the paper with dilute sulphuric acid.* The print thus obtained varies in depth according to the distribution of the sulphide in the steel, and sections for microscopic examination can then be cut from those parts of the section corresponding to the darkest part of the print. It is essential, however, to cut away the surface layer of metal which has been exposed to the acid, as otherwise the observer will only find the empty holes from which the sulphide has been dissolved.

While the work of those cited at the beginning of this paper has already thrown much light on the nature of these inclosed impurities, it appears that there is still room for doubt as to their true nature and origin. Thus the duplex appearance of some of the slag inclosures in steel is currently accounted for on the view that these duplex masses consist of sulphide of manganese imbedded in silicate of manganese, but the present author has observed instances of duplex inclosures in which neither constituent was readily soluble in acids.

A comparison of these inclosures with the "slag" or "cinder" inclosures which are so typical of wrought iron also furnishes some interesting facts. In wrought iron, while practically no manganese is present, there is always a large amount of enclosed non-metallic matter, and this sometimes presents a very well-marked duplex structure. Such cases, although sulphide of iron may be present, it seems probable that the constituents are two different silicates—or possibly oxides—of iron. Further study of these impurities is obviously required, particularly as it will be seen on studying the papers written on this subject by the authors cited above that our present knowledge of their nature depends principally upon chemical analyses of residues obtained after selective solution of the metal, and the uncertainty of results obtained in that way is well known.

* Although the method here ascribed to Baumann is perhaps the most convenient, the author believes that one of the earliest workers to make contact sulphur prints was Heyn (Berlin), who utilized thin sheets of silk saturated with acidified mercuric chloride and similar means of obtaining sulphur prints long before Baumann's suggestion of using photographic paper was made.

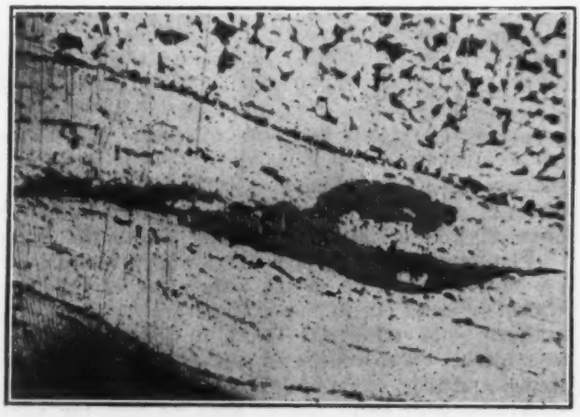


Fig. 5.—Same Inclosures as in Fig. 4 After Etching with Picric Acid. The True Contours of the Inclosure Are Revealed by the Removal of the Ferrite Which Had Been Smeared Over It. Also Shows the Position of the Inclosure in a Carbonless Band or Ghost.

Causes of Slag Inclosures.

Although a full knowledge of the nature of these bodies is essential as a preliminary to the investigation of their mode of origin, some considerations on that subpect are justified by the knowledge already available. Thus Stead suggests that these inclosures in the case of steel result from the introduction of oxygen into the steel either during the melting or the teeming process, this oxygen reacting with the manganese and silicon to form the manganese silicates, while the sulphur already in the steel combines with the manganese in the manner shown by Arnold and others. This is, of course, a possible and in many cases a perfectly probable source of these bodies; in fact, so far as the sulphide of manganese is concerned there is little need to look further. The only remedy for this class of inclosures is to keep the molten metal at rest for a sufficient time after the addition of manganese to allow the sulphide to rise to the surface; and in spite of the very considerable difference of density, this probably requires a much longer time than would be at first sight anticipated.

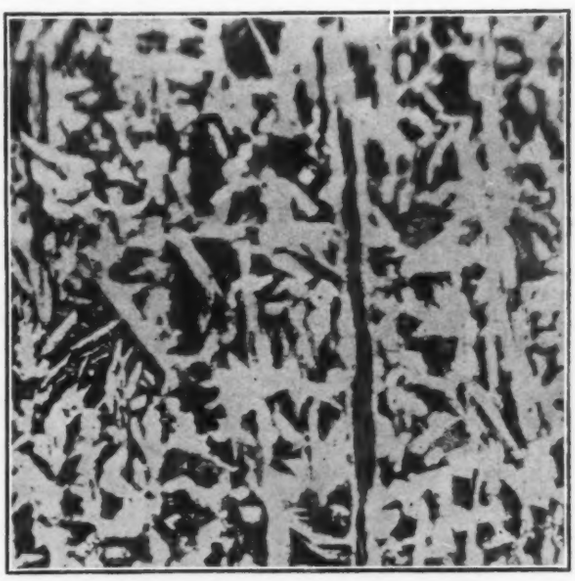


Fig. 6.—Elongated and Duplex Slag Inclosures in a Steel Rail, Specimen Etched with Picric Acid. Magnification 100 Diameters.

The entire protection of the steel from oxygen during the teeming operation is the obvious remedy for the formation of silicates on the view of Stead, although this remedy appears difficult to apply in practice. The writer would, however, point out that steel is also liable to contamination with impurities of a silicious nature from other causes. One of these is the possibility of incomplete separation of slag from metal in the furnace or the converter. The violent "boiling" of the steel must necessarily involve a good deal of intermixing of slag and metal and here again the time required for complete separation is probably longer than one might suppose, particularly where the smaller particals or globules of slag are concerned. Further, in the course of its passage from the furnace into the ingot molds the steel runs several risks of contamination with silicious matter. The tapping hole of the open hearth furnace is one of these, as also the gutter along which the steel flows into the ladle and the ladle itself, with its stopper, all present possibilities of introducing nonmetallic impurities into the metal, while, finally, where the process of casting in inverted ingot molds is used, the steel comes into contact with conduits of refractory material. From all these sources the molten steel will and does readily absorb

any detachable particles, and as the steel is in rapid motion there is little time for the lighter particles to begin to separate themselves, until the metal is at rest in the ingot mold, where it probably begins to solidify before the smaller particles have been able to free themselves. With these considerations in mind, the very great frequency with which nonmetallic impurities are met with in ordinary steel can no longer be regarded as surprising, and it appears probable that if some of these risks of contamination were minimized the prevalence of slag inclosures would be considerably reduced. For this reason the further and exact study of their nature and mode of origin appears most desirable.

While some of the workers cited above are evidently alive to the serious results which may and do arise from the presence of these impurities in steel, some metallurgists appear to look upon these inclosures as more or less normal and harmless, much as they might regard cinder or slag in wrought iron. From this point of view it may be pointed out that there is a considerable and vital difference between the behavior of slag in wrought iron and in steel. In wrought iron the metal itself is extremely soft and ductile and much less sensitive to local mechanical injury than the stronger but in some ways more sensitive steel. Even in steel, it is true, the nonmetallic impurities generally tend to segregate in regions or bands of ferrite, as in the case shown in Fig. 5, but where these impurities are embedded in the harder pearlite they are in contact with a material which cannot readily adapt itself to an essentially incompatible neighbor.

The deleterious influence of slag inclosures in steel has perhaps escaped attention to some extent, owing to the fact that in ordinary tensile tests, taken in a direction parallel to that of rolling, these inclosures only occupy a very small proportion of cross sectional area and possess a tapered shape which allows of gradual distribution of the stresses imposed on the material. Even in such tests, however, the writer has shown* that the slag inclosures are broken up into numerous pieces prior to the fracture of the metal. If now we consider the case of transverse stresses, or of shock or vibration, it will be seen that these inclosures will be fractured as soon as the metal undergoes any material deformation and then each such inclosure practically represents an internal fissure which is ready to extend, and actually does extend, in any direction compatible with the applied stresses.

The photo-micrographs in the earlier part of this paper have been taken, as has already been indicated, from two cases of actual service failure arising from the causes just indicated, and these two cases are typical of a number of others which occur in practice. The further study of the nature of these impurities and of the means of avoiding their presence in steel is thus a matter of considerable importance to users of that material.

* Journal of Iron and Steel Institute, 1906, II.

The Perkins Process of Refining Steel.

The Use of Electrodes Containing Slag Producing Materials.

A patent, No. 937,855, was granted to Frank C. Perkins, consulting electrical engineer, Buffalo, N. Y., October 26, 1909, on a "process of producing and refining steel," and it very closely affects the electric arc processes at present in operation. The application was filed May 11, 1908. It is a significant fact that with very few exceptions the electric furnace processes now in successful operation or in a promising experimental stage are of Swedish, French, German or Italian origin. The patent referred to is interesting, therefore, because it represents an advance into this field, so important both to this country and Canada, by an American inventor. The essential points of this invention, which appears to be of considerable metallurgical interest, are the following:

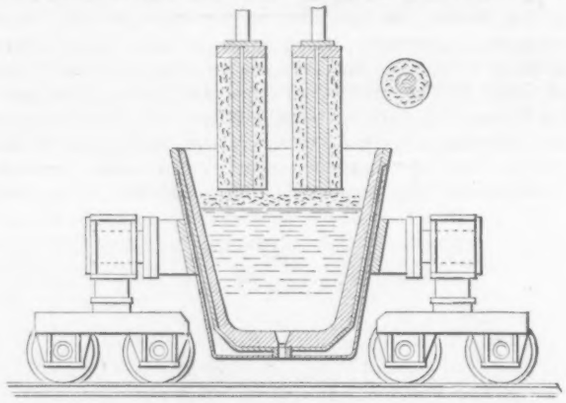


Fig. 1.—The Use of a Slag Producing Electrode in a Basic Lined Ladle.

The process depends upon the use of a composite or combination electrode to take the place of the usual carbon or metal one in the ordinary arc furnaces. Several suggested forms are shown in the accompanying illustrations. Two consist of carbons, either square or round, and lime, oxide of iron, or other slag producing materials, with some binder, such as coal tar pitch. Another shows the slag producing materials packed in an iron or steel pipe, and still others show the slag materials surrounding a carbon or steel rod either with or without projections for supporting them.

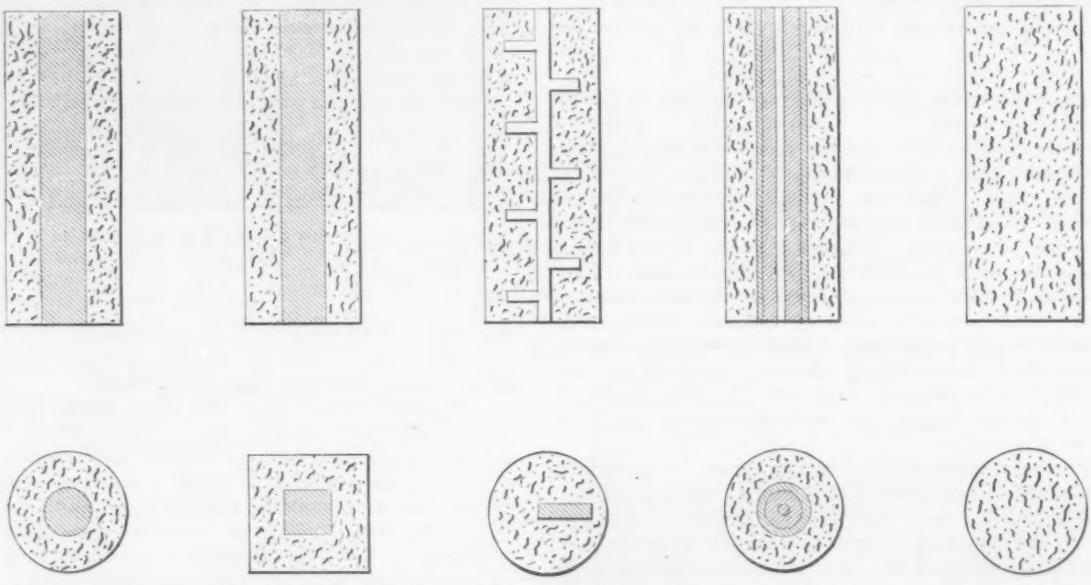


Fig. 2.—Suggested Forms of Composite Electrodes for Steel Furnaces.

By the use of these special electrodes fresh and additional slag refining materials may be added to the bath of metal, both fused and in a highly fluid condition, at the hottest points—namely, the arcs. These are the points of contact between the electrodes and the layer of slag floating on the bath of metal. The slags so produced are capable of very quick and efficient work.

Many ways of using these electrodes are possible and they are applicable to the existing types of arc furnaces. When two of them are used in a furnace of the double pole type the current passes from one electrode into and through the slag to the other electrode, the two arcs operating at about 100 volts pressure. One electrode may extend down into the slag, or into the molten steel below the slag, a single arc only being employed with a pressure of approximately 50 volts. A double pole furnace, such as the Heroult, is well adapted for working with these compound electrodes, the number of arcs being under control. If one arc only is used the other electrode may be raised and lowered by suitable mechanism, thus keeping the molten bath agitated. When only one electrode is to be used a method similar to the Girod may be employed, the current passing in an arc from the electrode to the slag, then through the slag and the metal, and through an electrode or electrodes in the bottom of the furnace.

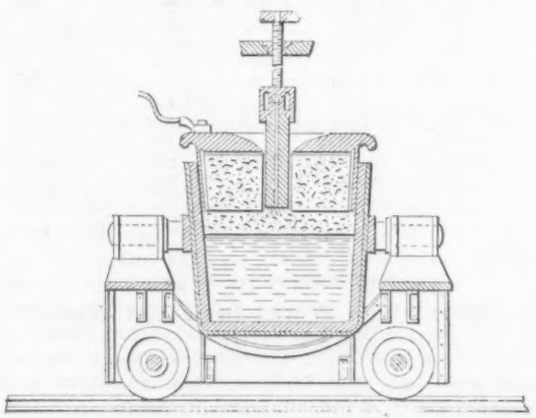


Fig. 3.—The Use of a Ring Electrode Arranged on a Level with the Slag.

One method in which the use of the electrodes seems promising is to use a basic lined ladle without a cover, as shown in Fig. 1. The metal having been charged from a Bessemer converter or open hearth furnace is electrically refined for the removal of sulphur, phosphorus and gases. If necessary it is deoxidized and recarburized. The steel is then poured into ingots after an operation lasting from a few minutes to an hour or more, depending upon the degree of refining desired. Another suggested method is shown in Fig. 3, where what may be called a ring electrode is arranged on a level with the slag. A single arc only is used, the other electrode dipping into the slag or molten steel.

The special field of this new electrode is its application to refining processes. It is well known that in the acid Bessemer process the quality depends almost entirely on the metal, it being impossible to eliminate the sulphur and phosphorus. The carbon, manganese and silicon can readily be controlled and kept uniform, but the other elements depend upon the charge. By the arc process the blown Bessemer metal can be refined and the sulphur and phosphorus lowered to any desired extent.

The determining factors in these refining processes are cost and output. By shortening the time of treatment through the use of these combined electrodes and refining only down to such phosphorus and sulphur percentages as are essential for rails and structural steels, the small power requirements and the output make it a practical process. With the proposed electrodes containing slag producing materials it should be possible to lower the phosphorus to 0.03 or 0.05 per cent. within a short time and so bring the process within practical limits for Bessemer working.

It is also, of course, applicable to open hearth metal, and stress may be laid upon the degree of deoxidation which may be obtained. Materials can be used in the electrodes and added to the bath to make a neutral slag, for it is maintained that a thorough deoxidation of the steel is not possible when there are oxides of iron in the slag, the oxides reacting upon the bath of molten steel.

By means of these electrodes and the arc process carbon or a mixture of carbon and iron may be added to the neutral slag as an auxiliary to the carbon of the electrode, forming calcium carbide and resulting in deoxidation, without difficulty and at a small cost. The neutral elag electrodes may be worked with a low current arc or by dipping into the slag and heating by resistance, and the steel may be kept for hours under its covering of molten neutral slag without changing in quality. In short, it would seem that the manifold advantages of electrical refining apply with even greater force to processes using these composite electrodes.

The cost of production of the steel will be low, for most of the work is done in the Bessemer or open hearth, only the removal of part of the phosphorus and sulphur being attempted, and the time necessary being therefore greatly lessened.

The easy and practical methods outlined above are of importance, for they are readily applicable to existing Bessemer and open hearth plants. G. B. W.

A Triumph for the Marine Turbine.

While the battleship North Dakota has considerably exceeded its contract requirements, practical interest centers in the increased steaming radius made possible by the high efficiency of the Curtis turbines, with which it is equipped, rather than the fact that its maximum speed was 22.25 knots with a requirement of only 21 knots. With a coal consumption of only 105 tons per 24 hours, at the ordinary cruising speed of 12 knots, as compared with 111 tons burned on its sister ship, the Delaware, fitted with reciprocating engines, it is possible for the North Dakota to steam further without recoaling. Calculation from results of the trials shows that the North Dakota's steaming radius at 12-knot speed is 9000 knots, while at 19 knots it is 4600 knots, and at the maximum speed of 21½ knots per hour it is 3000 knots.

The results of the official trials are as follows:

	3 hours of full power.	24-hr. trial at 19 knots.	24-hr. trial at 12 knots.
Actual average speed	21.64	*19.24	12.05
Revolutions per minute	280.4	231.9	143.2
Shaft horsepower of main turbines	31,400	*16,710	3,800
Indicated horsepower of engine auxiliaries	1,100	*660	400
Water rate of main turbines only	13.6	14.11	20.5
Water rate for all engine purposes based on total horsepower	13.96	15.29	22.3
Coal used, pounds per hour	54,400	*27,550	9,820
Coal used, tons per 24 hours.	583	295.3	105
Coal per hour per shaft horsepower of turbines	1.74	*1.65	2.58
Coal per hour per horsepower for total horsepower	1.68	*1.58	2.34
Coal per hour of equivalent i.h.p based on 8 per cent. friction for reciprocating engine	1.55	*1.46	2.15

* All preceding figures are official except those starred.

Standardization Trial.

Highest speed on mile, uncorrected for tide, knots	22.25
Mean of five high runs, knots	21.83
Revolutions per minute for 21 knots	263
Revolutions per minute for 19 knots	228.8
Revolutions per minute for 12 knots	142.5
Maximum shaft horsepower developed on mile	35,150

The employees of the railroad companies having terminals in the city of Chicago are using every effort to defeat the proposed city ordinance compelling the electrification of railroad terminals. The chief reason for the opposition to electrification is that many of the railroad employees would be thrown out of employment by the substitution of electricity for steam. Other reasons are given, but they are of much less importance.

The Osborn Jolt Molding Machine.

The distinguishing feature of the plain jolt molding machines made by the Osborn Mfg. Company, Cleveland, Ohio, is the variation of the length of stroke that may be obtained. This variable length of stroke is controlled by a traveling valve, which is adapted to be set to give any stroke required, from 3-16 to 1½ in. The ability to change to different lengths of stroke will be found of great advantage in foundries molding a variety of castings and where there is a variation of the air pressure. This principle of a variable controlled stroke was first

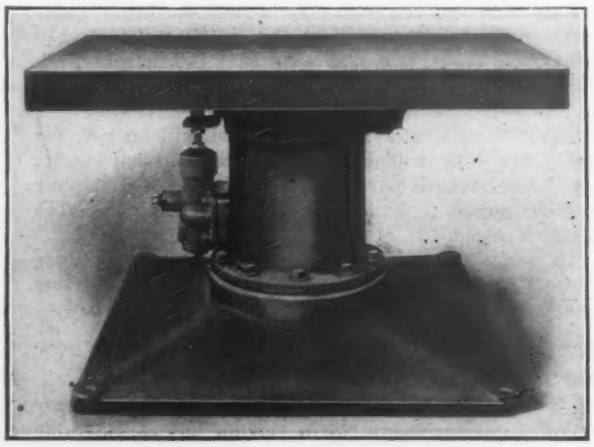


Fig. 1.—The New Plain Jolt Molding Machine Made by the Osborn Mfg. Company, Cleveland, Ohio.

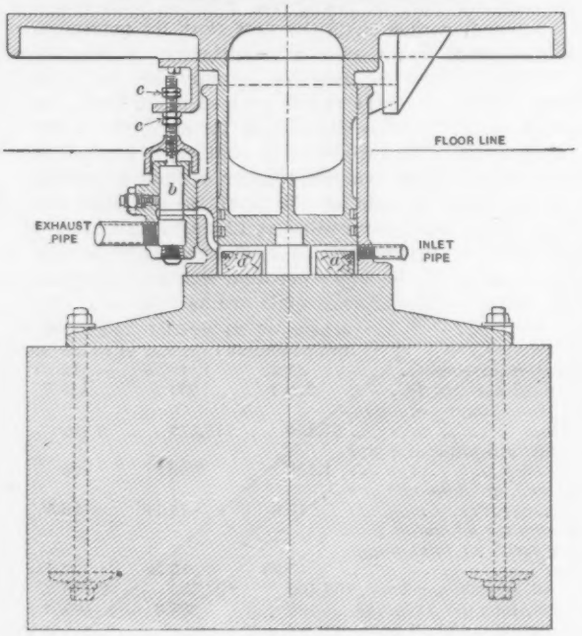


Fig. 2.—Sectional Elevation, Showing Construction and Action of the Osborn Jolt Molding Machine.

shown in use on this company's rock-over jolt machine at the Cincinnati convention of the American Foundrymen's and Manufacturers' Supply Association. Another feature of the machine is the large diameter of cylinder used, as the result of which greater stability and more accurate stroke are obtained. It is declared that each machine will be found to have a lifting capacity greatly in excess of its rating, and in spite of this greater lifting capacity, it is claimed, the machine requires a smaller quantity of air per pound lifted than any other machine made. This result was accomplished by the use of an ingenious blocking device used in the air chamber, as later described.

Fig. 1 is a general view of the machine and Fig. 2 a sectional elevation, from which the construction and operation will be readily understood. The machine is operated on 60 lb. air pressure, or less than similar machines. With the system of blocking employed cylinders of larger diameter may be used to give greater stability and to keep the table on center when heavily loaded. At the same time less air is used even than in machines with smaller cylinders of the same lifting capacity. This blocking system consists of a set of fixed rings designated by *a* in Fig. 2. These rings fill up a large portion of the space that would otherwise have to be filled with air.

To change the length of stroke to suit the work or meet variations in air pressure, the traveling port valve *b* can be set to give any stroke from 3-16 to 1½ in. The hight to which the mold is raised before it is allowed to fall is governed by adjusting the exhaust valve by the lock nuts *c*, shown under the table of the machine. The traveling port valve that permits the change of the stroke is the particularly novel feature. The table plunger works inside of the cylinder, and when the air is turned on the plunger is forced up until the table opens the exhaust and the sudden release of the pressure allows the plunger to drop and jolt, again closing the exhaust, and so on.

As the following table shows, the machine is made in sizes to take molds ranging in weight from 1000 to 20,000 lb.:

No.	Size of table. Inches.	Lifting capacity. Pounds.	Size of cylinder. Inches.	Cubic feet of free air required per min.	Blows per min.
101	33 x 33	1,000	8	48	200 to 400
102	33 x 48	1,500	12	110	200 to 400
103	36 x 60	2,000	15	147	175 to 350
104	42 x 66	5,000	18	186	150 to 300
105	48 x 72	10,000	20	190	125 to 250
106	54 x 96	15,000	26	265	100 to 200
107	60 x 96	20,000	30	295	75 to 150

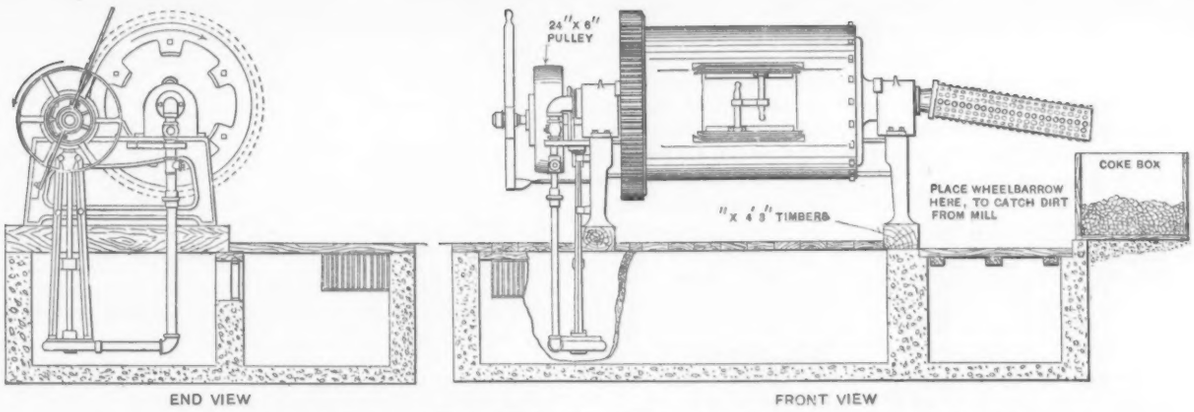
The machines with a lifting capacity of 15,000 to 20,000 lb. have steel tables; the smaller sizes have cast iron tables.

The Central Iron Works Improved Water Cinder Mill.

Practical economies in manufacturing plants are being more and more directed to the saving of material that is ordinarily not utilized and therefore represents actual waste. An example of modern development along this line is furnished in the water cinder mill designed and made by the Central Iron Works, Quincy, Ill., for saving iron and coke from cupola cinders and gangway cleanings. It is guaranteed to recover 95 per cent. of the iron and about 80 per cent. of the coke from cupola cinders and gangway cleanings. This machine is a source of direct revenue, inasmuch as its product consists of material that without means of separation from the refuse which surrounds it would be valueless.

The installation includes a tank of brick and concrete divided into three compartments, the first of which is located directly under the mill and contains the water supply for the pump; the second is used as a settling basin and the third for refuse matter. Cinders are first crushed in the mill and are then flooded with water raised from the tank by a centrifugal pump which separates the iron from cinder and coke, carrying the latter out of the mill barrel through a hollow trunnion into a connecting cylinder screen. Revolving in unison with the mill, the screen sifts out the dirt and cinders and discharges the coke into a convenient receptacle.

The mill cylinder is formed of a rolled steel plate 1 in. thick and contains a separating head at each end. It is belt driven through a shaft and spur gear which meshes with a large gear encircling the circumference of one end of the shell. Both gear and pinion have 5-in. face. Ball and socket ring oiling bearings are provided for the trunnion and pinion shafts. The shell is joined on its longitudinal seam with a butt strap joint with deeply countersunk rivets; the holes into the shell are tapered for a depth of ⅞ in. at an angle of 18 degrees. The rivets being driven flush with the shell on the inside, a smooth, even surface is provided and the wear on the rivet heads is only equal to that of the shell. The importance of this feature is quite apparent, since with a shallow countersink for exposed heads the constant wear



Elevations of an Improved Water Cinder Mill Built by the Central Iron Works, Quincy, Ill.

upon the rivets soon weakens their holding power and loosens the joints of the shell.

Water for the washing process is supplied by a centrifugal pump placed in the tank below the mill, as shown in the illustration. To protect it from the cutting effect of sand and grit, always present to a greater or less extent in the water, the shaft bearing is lined with hard maple plugs bored to fit the shaft. To allow room for impurities that may find lodgment in the bearings to work out, a small space is left between each plug so that trouble from this source is minimized. The pump may also be used for draining the tanks, and to use it in this manner a hose is attached to the tee on the inlet pipe when, after closing the stop cock above it, water is diverted through the hose. The operation of the mill is stopped and started through a friction clutch.

Dry Docks for Canada.

TORONTO, November 13, 1909.—The starting point of the Dominion Government's policy for the encouragement of shipbuilding on naval and merchant marine account is expected to be in a more liberal arrangement for dry docks. As has been previously mentioned the present arrangement—embodied in an act passed last year, before opinion was stirred up on the naval question—provides for the payment by the government of an annual subsidy of 3 per cent. for 20 years upon the cost of the dry dock or dry docks constructed and operated under the act, the total amount paid in any year not to exceed $45,000. The government has just been asked to make its contribution larger. On October 26 an influential deputation waited on Sir Wilfrid Laurier and made strong representations in favor of an arrangement to raise the rate to 4 per cent., to extend the period to 50 years and to enlarge the subsidy to an annual sum of $240,000. Assistance would be required on that scale, the petitioners said, in order to induce capital to go into the two great dry dock undertakings they proposed—namely, one at Levis, on the St. Lawrence, and the other at St. John, at the head of the Bay of Fundy. To build the Levis dock projected $3,700,000 would have to be invested, and to build that at St. John an outlay of $2,225,000 would be required. The deputation included J. M. Bosworth of the Canadian Pacific Steamship line; Andrew Alan of the Alan Line; the Premier of New Brunswick; the Mayor and prominent members of the Board of Trade of St. John; G. W. Volcaman, representing the contracting firm of McArthur-Perks; Hon. L. A. Taschereau of the Quebec government; W. L. McPherson of the White Star-Dominion lines; J. B. Laliherte of the Quebec Harbor Board; G. T. Davies of the existing Levis Dry Docks & Shipping Company, and Captain Newton, representing British shipbuilding interests. The proposed dry dock for St. John would be 800 ft. long and 130 ft. wide. That at Levis would be 1000 ft. long. A repair plant would be built at St. John and a shipbuilding plant would be added at Levis in connection with the taking over of the present dry dock and salvage plant there. The statement was made that the shipping interests of Canada and some other parties had incorporated the Dominion Dry Dock Company with a capital of $1,000,000, to build the Levis and St. John docks proposed.

Sir Wilfrid Laurier promised to give the matter full consideration. It has since been stated in government papers that it is unlikely the assistance asked by the deputation will be granted in the full, as the Government deems a 4 per cent. rate on a capital outlay for 50 years too much to concede. The suggestion has also been made that the need for dry docks large enough to accommodate the largest vessels afloat might be provided for by the Government itself without the agency enterprise. It is known that the British Admiralty desires large dry docks to be established on Canada's Atlantic Coast. The importance of such equipment for purposes of Canada's naval defense was, it appears, strongly impressed at the recent imperial conference on defense. All the existing dry docks on the country's Western coast and on the St. Lawrence are too small to take in vessels of the largest class, whether mercantile or naval. The Government dry dock at Levis is 600 ft. long and 62 ft. wide at the entrance. Its length is great enough for any ships now of the Canadian route, but it is too narrow for several. The Halifax dry dock is 600 ft. long and its width of entrance is 89 ft. It is just large enough for the biggest merchant ships on the Canadian route, but will not accommodate the large naval vessels. Absence of facilities for repair is a drawback to the Canadian route and affects insurance rates detrimentally for ship owners. The Empress of Ireland, which met with an accident lately on this side of the Atlantic, had to be sent across the ocean for repairs.

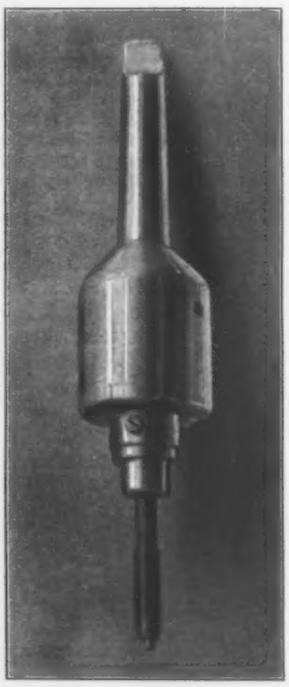
C. A. C. J.

The Youngstown Tubular Goods Code.—The Youngstown Sheet & Tube Company, Youngstown, Ohio, is distributing the 1909 edition of its telegraph code book, giving the code words for ordering standard, extra strong and double extra strong steam, gas and water pipe (black and galvanized), lap welded casing, Youngstown California casing, Youngstown coaling special casing, oil well tubing, Youngstown standard rotary drill pipe, line pipe, drive pipe, and Youngstown standard Coaling a special drive pipe. Code words are given for the different sizes; manner in which the pipe is to be fitted, that is with respect to threads, couplings, flanges and protectors; for general specifications, weights, how the dimensions are to be taken, prices and discounts, matters pertaining to buying and selling, orders, dates and times, ways in which goods are to be shipped, and code words for numerals and fractions to specify quantities. Code words are also given for the different railroads and steamship lines, express companies, and for letter and telegraph correspondence. The book is 3¾ x 6¼ in. in size, contains 64 pages and is bound in flexible leather.

Hermes, publisher of the *Finnish Business Monthly* and the *Finnish Commercial and Industrial Directory*, also conducting a commercial information bureau, offers its services to those desirous of extending their trade connections in Finland. It can be addressed at Helsingfors, Finland.

The Thompson Automatic Tapping Chuck.

Two new tapping chucks known as the Thompson automatic tapping chucks styles A and B are being introduced by the Pawtucket Tool Company, Inc., Pawtucket, R. I. The first is intended for use on radial drills particularly or any drilling machine provided with reversing mechanism. The style B is designed more especially for upright drills, although it can also be used on radial drills, and contains its own reversing mechanism. In both styles the aim has been to overcome the deflects in the ordinary forms of tapping chucks, principally those which develop when it is attempted to use them for hard or continuous service. For example, it is the contention of the manufacturer that chucks employing a friction involve considerable loss of time in adjusting the friction according to the size of tap used, and also when the friction is made too tight for the strength of the tap there is danger of breaking the tap and losing additional time in extracting it. Where chucks are used by different men and often inexperienced ones it is particularly necessary that all delicate mechanism be eliminated from them.



The Thompson Style A Automatic Tapping Chuck.

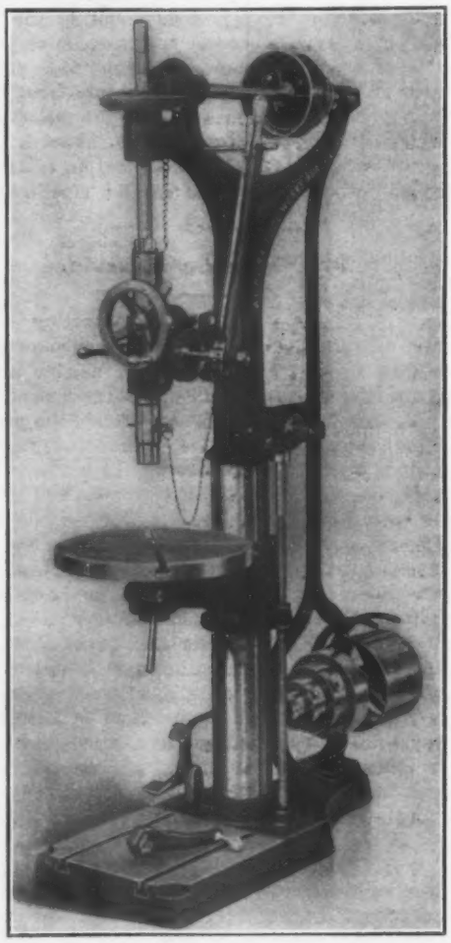
Fig. 1 shows the style A chuck, which it is claimed is simple in construction and cannot very easily get out of order. The chuck, as will be seen, is round and smooth on the outside and has no projecting parts to menace the operator. All parts are made of steel and are hardened throughout. The taper shank by which the chuck is held in the machine spindle after the manner of an ordinary drill, is specially hardened so as to withstand excessive strain. When the operator starts to tap the hole and follows the tap down in the usual way, the pin at the bottom of the tap comes in contact with the bottom of the hole slightly lifting the tap, which results in disengaging the driving clutch, allowing the body to revolve while the tap is stationary. To extract the tap the operator, after first reversing the spindle of the drill press, raises it a little to allow the driving clutch to fall back in place.

Generally similar in external appearance is the style B chuck in which, however, special attention has been given in the manufacture to make all of the working parts thoroughly reliable. The bevel gears, through which the reversing is accomplished, are of machine steel, and the clutches are of steel and hardened throughout. The chuck is simple in its operation, which is much the same as that of the style A chuck, except that, after the lifting pin comes in contact with the bottom of the hole relieving the driving clutch, the later lifting of the spindle by the operator causes the driving clutch member to fall back into the reversing gear, thereby extracting the tap automatically. It is claimed that this clutch is also very unlikely to get out of order.

Among the advantages that are presented as applying to both types of chucks are: That they are simple in construction, requiring no tightening nor loosening; the holes are tapped clear to the bottom, which does away with hand tapping, and it is impossible to break taps; no dependence is made on the operator; no alterations are required in the adjustment of the chuck, if one hole has not been drilled as deep as another; the chuck taps the hole, stops automatically and instantaneously, and there is no slipping when the work is of a material that is too hard. The style A chucks are made in four sizes, Nos. 0, 1, 2 and 3, handling taps ranging, respectively, from ⅛ to ⅜, ⅜ to 1, ¾ to 1½, 1 to 2, and 2 in. up. Special chucks can be made for such taps as large pipe taps. The style B chucks are made in three sizes, Nos. 0, 1 and 2. The first takes taps ranging from 3-16 to ½ in., the second taps from ½ to 1 in., and the third from 1 to 1½ in. Larger style B chucks can be made to order.

The Aurora Improved 20-in. Upright Drill.

A new pattern of plain hand feed upright drill is being built by the Aurora Tool Works, Aurora, Ind. While there are some improvements in minor details, principally important is the increase of strength and weight of the drill. Where this one weighs 650 lb., older drills of corresponding size weigh from 500 to 550 lb. The other improvements have mainly to do with simplifying and rendering more convenient the manipulation of the drill. Such of its features are apparent from the accompanying illustration without special description. The drill is equipped with wheel and lever feed and



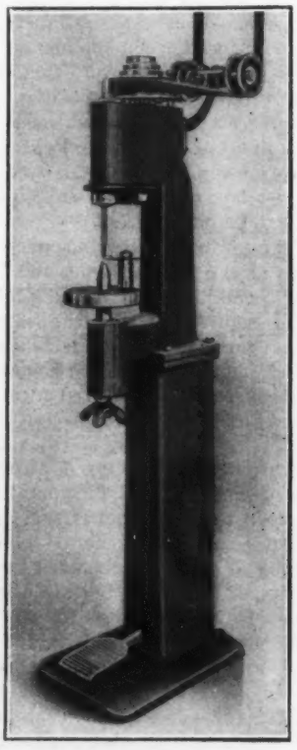
The Improved 20-In. Wheel and Lever Plain Drill Built by the Aurora Tool Works, Aurora, Ind.

drills to the center of a 20-in. circle. It is built either plain or with back gears.

The hight of the machine overall is 68 in. Between the base and the spindle the maximum distance is 31 in. and between the table and spindle 20 in. The table has a traverse of 20 in., and the spindle a traverse of 7 in. The hole in the spindle takes a No. 3 Morse taper. The spindle is 1 7-16 in. in diameter in the sleeve and 1 5-16 in. in diameter above it. The table is 16¾ in. in diameter. Four changes of speed are obtained from an ordinary cone pulley and eight when back gears are provided. The machine requires ½ hp. for its drive and occupies a floor space of 3 x 1½ ft.

The Greiner Riveting Machine.

The speed with which the work is done and the fine finish given to the work are regarded by the Charles Greiner Company, New Haven, Conn., as the principal advantages of its high speed, elastic blow riveting and spinning machine. The machine will strike from 1000 to 6000 blows per minute when the treadle is depressed, and rivets faster than work can be handled. Other reasons why the machine should appeal to manufacturers of general hardware, typewriters, fittings, &c., are that it is low in cost, that it does not simply revolve, but rivets and spins at the same time that it does not bend the rivets, but upsets them, that the elastic blow does not injure or crack work that it may be regulated by the treadle to deliver a light or heavy blow, that the hammer is always up away from the work when the treadle is released, and that very simple tools are all that are needed and expensive rolls are done away with. The smallest machine rivets, any size up to 3-16 in.



The Greiner High Speed Elastic Blow, Combined Riveting and Spinning Machine.

The working element of the machine is a spring cushioned hammer working in a gun metal cylinder, and actuated by the engagement of a roller on its upper end with camlike projections on the lower face of a flange, which revolves in a horizontal plane and is driven by a friction clutch. The camlike projections ordinarily are six in number, and running at 1000 rev. per min., deliver 6000 elastic blows to the work. These may be increased to as many as 20, producing 20,000 blows per minute, when the flange revolves 1000 rev. per min., but it has been found for ordinary work that 6000 blows heads a rivet as fast as the work can be placed under the head of the hammer. In combination with this large number of blows the hammer spins at a high rate of speed, and causes the head of the rivet to be evenly spread with the result that a fine finish is obtained. On account of the elastic blows the machine is able not only to do the work that a spinning machine would ordinarily be required to handle, but in addition will care for a class of work that only blow riveters are usually adapted for. The same machine can be changed into a straight blow machine in a few minutes' time.

One of the distinct features is that the hammer is always up and away from the work when the treadle is released, hence the table does not have to be movable. Vibration is a serious objection in blow riveters, but it is entirely overcome in this machine and does not exist at any speed. This is proved by the fact that it is unnecessary to fasten the machine to the floor when running. The simple tools used in place of the expensive spinning rolls allow working close to shoulders and bends. It is stated also that tight and loose rivets can be handled with equal rapidity. The elastic blow prevents injury to particular work and allows for working at various hights of rivets at the same setting. The ability to handle long rivets without bending particularly adapts the machine to such work as the assembling of hinges, casters, cutlery and general hardware. Wooden handles for cutlery can be riveted both heads at a time without bending the long slender rivets or splitting the wood. The machine is especially offered to do kinds of riveting which are ordinarily difficult. It is built in all sizes and styles with single or double heads, and special machines are built to order.

Canada and the Maximum Duties of the Payne Tariff.

TORONTO, November 13, 1909.—Speculation as to the liability of this country to be penalized in the maximum duties of the United States tariff is at work in the minds of many Canadians at the present moment. It is the subject of countless editorials and a topic of conversation in circles wherever politics is discussed. So far little indication of government interest in the matter has been given. In a speech delivered at a public meeting last week, addressed in behalf of the ministerial candidate in an Ontario by-election contest, the Minister of Railways and Canals touched upon the possibility of a tariff war with the United States. He said:

> We found our products shut out by the McKinley tariff, and now instead of selling to the United States we compete with them, and they are feeling that what we have done before we can do again. We will have no cause to fidget even if the powers given to the President should be exercised to the full. There will be no stampede of the Government or of the Parliament of Canada. We will proceed in a dignified manner, finding new markets and so legislating that the results will be in the interests of Canada, regardless of the United States.

That Canada gives to some other countries tariff favors which are not extended to the United States is unquestionable. To the United Kingdom and to certain of the colonies of the British Empire are conceded the privileges of the preferential tariff. It is believed, however, that the granting of these advantages would not be considered as rendering the country liable to the penalties of the United States maximum tariff. The concessions being restricted to other communities of the British Empire, it is thought that the United States Government would treat them as of a purely domestic nature.

Of another character are the duties under which, according to treaty, a large number of French articles are admitted into Canada. France is a foreign country, and such other nations, as Switzerland, that participate in the same privileges in virtue of the most-favored-nation clause are also foreign countries. The United States could make its exclusion from the benefit of these duties a ground for imposing its maximum duties on at least some of the products of Canada. It would probably be the more inclined to do so if France should be one of the countries against which the maximum tariff should be made effective.

What might be regarded as another provocation to proclaim the maximum duties against Canada, or against two of the Provinces of Canada, is the maintenance by these provinces of restrictions upon the exportation of pulpwood. It is true these restrictions have no invidious bearing toward the United States. They are of general application, there being no exception in favor of any country, not even the United Kingdom itself. Further, they pertain only to pulpwood that is cut on the Crown lands, pulpwood cut on the millions of acres of privately held lands being as free to drift to the United States as to any part of Canada. Ontario's restriction is in the form of a condition in the licenses under which lumbering operations are carried on on the Crown lands, the condition being that the pulpwood cut thereupon shall not be taken out of the country in the raw state. Quebec's restriction is in the form of a differential stumpage tax of 25 cents a cord upon such Crown lands pulpwood as is exported.

It is somewhat curious to note the different feelings which the idea of the United States imposing maximum duties on Canadian goods excites. It is by no means certain that those who hope the duties will remain as they are are in the majority. There are at all events many who would not be averse to having a state of tariff war between the two countries. Those of that mind are desirous of having Canada's tariff protection increased

along the United States border. One possible opportunity for securing this would be presented if the United States were to declare any Canadian products to be subject to the maximum duty. Such action on the part of the United States would almost automatically bring into effect against that country the surtax provision of the Canadian Tariff act, according to which dutiable goods that are the product of countries maintaining tariff discrimination against Canada become subject to an additional duty amounting to one-third of the regular rate. Such a hoisting up of the duties on United States products would have a very telling effect in the way of protecting Canadian industry. Canadian manufacturers would thereby be benefited and would at the same time be little injured by the application of the United States maximum duties, inasmuch as Canadian manufacturers are not, even under the minimum duties of the United States, large exporters to that country.

Another weapon in the hands of the Canadian Government is that of a pulpwood embargo. Though the provinces can make regulations more or less limiting the movement of their raw pulpwood out of the country, it is only the Dominion Government that can put an absolute check upon the exportation of pulpwood. It can impose an export duty that is high enough to negative the passing of a single cord of pulpwood out of the country. By an act passed in 1897 the Dominion Government is authorized to impose a stiff export duty on pulpwood. The act was to remain in abeyance until formally proclaimed by the Governor in Council. It has never been proclaimed, and it is at the pleasure of the Government whether and when it ever shall be. Sir Wilfrid Laurier has always been disposed to cultivate good relations with the United States, and for that reason refrained from making this law operative. If a tariff war ensues March 31 it will not be of his seeking, and it will not be unwelcome to Canadian manufacturing interests.

C. A. C. J.

A Promising Report on Alcohol Engines.

Gasoline vs. Denatured Alcohol as Engine Fuel.

The United States Geological Survey has issued a bulletin on "Commercial Deductions from Comparisons of Gasoline and Alcohol Tests on Internal-Combustion Engines," by Robert M. Strong. The tests, which were under the technical direction of R. H. Fernald, engineer in charge of the producer-gas section of the technologic branch, were conducted at the fuel testing plant in St. Louis, Mo., and at Norfolk, Va. When the series of tests was started it was found that it took from one and one-half to two times as much alcohol as gasoline to produce a given power. With special alcohol engines, entirely suited to the use of alcohol, the latter fuel has been made to do as much work, gallon for gallon, as the gasoline. Some of the more important results and conclusions stated in this bulletin are as follows:

The low heating value of completely denatured alcohol will average 10,500 B.t.u. per pound, or 71,900 B.t.u. per gallon. The low heating value of 0.71 to 0.73 specific gravity gasoline will average 19,200 B.t.u. per pound, or 115,800 B.t.u. per gallon. The low heating value of a pound of alcohol is approximately six-tenths of the low heating value of a pound of gasoline. A pound of gasoline requires approximately twice the weight of air for complete combustion as a pound of alcohol.

A gasoline engine having a compression pressure of 70 lb., but otherwise as well suited to the economical use of denatured alcohol as gasoline, will, when using alcohol, have an available horsepower about 10 per cent. greater than when using gasoline.

When the fuels for which they are designed are used to an equal advantage, the maximum available horsepower of an alcohol engine having a compression pressure of 180 lb. is about 30 per cent. greater than that of a gasoline engine having a compression pressure of 70 lb., but of the same size in respect to cylinder diameter, stroke and speed.

Use of Water-Diluted Alcohol.

Alcohol diluted with water in any proportion, from denatured alcohol, which contains about 10 per cent. of water, to mixtures containing about as much water as denatured alcohol, can be used in gasoline and alcohol engines if they are properly equipped and adjusted. When used in an engine having a constant degree of compression, the amount of pure alcohol required for any given load increases and the maximum available horsepower of the engine decreases with a diminution in the percentage of pure alcohol in the diluted alcohol supplied.

In regard to general cleanliness, such as absence of smoke and disagreeable odors, alcohol has many advantages over gasoline or kerosene as a fuel. The exhaust from an alcohol engine is never clouded with a black or grayish smoke, as is the exhaust of a gasoline or kerosene engine when the combustion of the fuel is incomplete, and it is seldom, if ever, clouded with a bluish smoke when a cylinder oil of too low a fire test is used or an excessive amount supplied, as is so often the case with a gasoline engine. The odors of denatured alcohol and the exhaust gases from an alcohol engine are also not likely to be as obnoxious as the odor of gasoline and its products of combustion.

Very few alcohol engines are being used in the United States at the present time, and but little has been done toward making them as adaptable as gasoline engines to the requirements of the various classes of service. Engines for stationary, marine and traction service, automobiles, motor trucks and motor railway cars designed especially to use denatured alcohol have, however, been tried with considerable success.

Restrictions to the Use of Alcohol.

The price of denatured alcohol is greater than the price of gasoline, and the quantity of denatured alcohol consumed by an alcohol engine as ordinarily constructed and operated is in general relatively greater than the quantity of gasoline consumed by a gasoline engine of the same type. Considerable attention is being given to the development of processes for the manufacture of alcohol from cheap raw materials which are generally available, and it seems reasonable to expect that the price of denatured alcohol will eventually become as low or lower than the price of gasoline, especially if the price of gasoline advances. It also seems reasonable to expect a greater general improvement in alcohol engines than in gasoline engines.

When used as a fuel, denatured alcohol is not always so classed as to be exempt from restrictions placed on the use of gasoline by the rules of insurance and transportation companies or city ordinances. The restrictions that are placed on the use of denatured alcohol are, however, never greater than those placed on the use of gasoline. In some places, they are such that the use of an alcohol engine is permitted where the use of a gasoline engine is prohibited. For instance, alcohol motor trucks and automobiles are admitted to many of the steamer piers in New York that are not open to gasoline machines.

Denatured alcohol will, however, probably not be used for power purposes to any great extent until its price and the price of gasoline becomes equal and the equality of gasoline and alcohol engines in respect to ability to service required and quantity of fuel consumed per brake horse-power, which has been demonstrated to be possible, becomes more generally realized.

A further general development in the design and construction of engines that use kerosene, or cheaper distillates, and the crude petroleums may be reasonably expected and may delay the extensive use of denatured alcohol for some time to come, but as yet comparatively few data pertaining to this phase of the general investigation are available.

The National Association of Cement Users has decided to add another day to the date previously published for its sixth annual convention, to be held in Chicago in February, so that the complete dates are now February 21 to 25. The exhibition connected with this convention will be open from February 18 to 26.

The Red Wing Adjustable Bolt and Clamping Devices.

For temporary uses and particularly the securing of work to the tables of machine tools the Red Wing Adjustable Bolt Company, Red Wing, Minn., manufactures a bolt the head of which can be quickly shifted to vary the length. The bolt, which is shown in Fig. 1, is intended for use wherever otherwise it would be necessary to have an assortment of lengths for temporarily securing parts of any kind together. Obviously from its construction the bolt is not adapted for permanent use, nor would its cost admit of such use. It is solely intended as a convenience and time saver where frequent changes are made.

Used in connection with the adjustable rest shown in Fig. 2 and the elongated U shaped clamping bar, shown in Fig. 3, a piece of work may be quickly secured to the table of a drill press in the manner indicated in Fig. 4. A modification of the bolt with a T head to engage a slot of a planer or milling machine table may be substituted for the regular bolt, as is indicated in Fig. 5. While a detail of this adjustable T slot bolt is not shown it differs only in that the adjustable head is in one piece with a standard that has a square headed screw threaded into its base.

The unique feature of all of the devices is the manner of attaching the abutting piece which forms the head of the bolt and the clamp support on the adjustable rest. The bodies of the bolts and rests are in the form of a series of truncated cones with half round straight grooves milled in one side of each cone face. The abutment piece or head has a tapered bore conforming to the truncated cones which bore is cut through on one side, so that in plan the piece is of U section. It may consequently be slipped transversely around any one of the conical steps, and to hold it from displacement a taper plug key is inserted through holes in the legs of the U so as to bear against and bind in the groove in the cone step. Thus the head of the bolt may be shifted to give the approximate length desired, and the remaining adjustment is made with the nut on the threaded end.

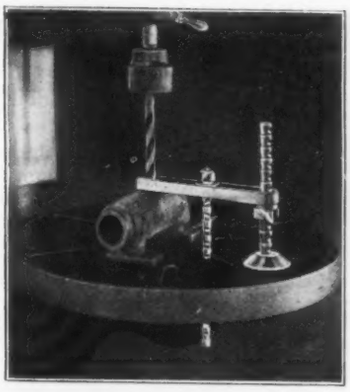


Fig. 4.—The Clamp Applied to Hold Work on a Drill Press Table.

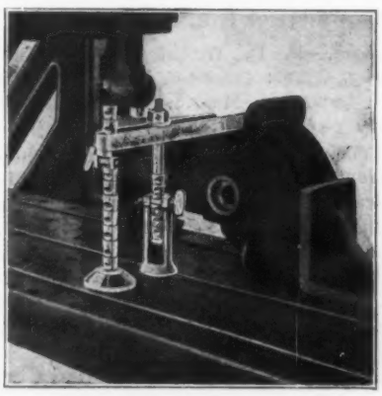


Fig. 5.—An Arrangement for Use on T-Slotted Machine Tool Tables.

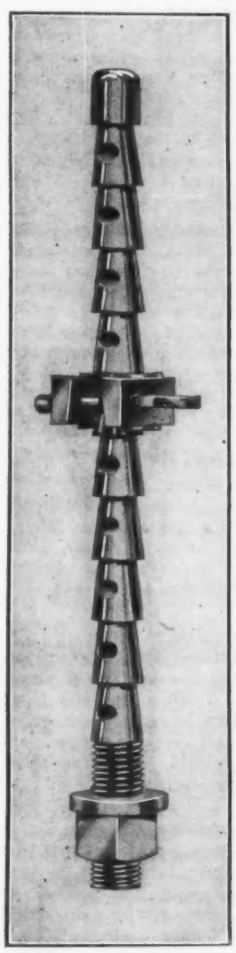


Fig. 1.

Fig. 2.

The bolts are made of screw steel and are case hardened. The U shaped heads are tool steel, which makes them very strong and durable. The parts are sold separately or in outfits, consisting, for example, of a ⅝-in. adjustable bolt 14 in. long, ¾-in. adjustable rest, 12 in. high and one U clamp. This is known as outfit B. Outfit C is the same except that the adjustable bolt is of ¾ in. diameter, and the adjustable rest 1 in. diameter, and outfit D is the same as C except that the adjustable bolt is ⅞ in. in diameter. The T slot adjustable standard and bolt referred to as used on planers and milling machine tables is furnished with what is known as T slot outfit No. 5, consisting of one ⅝-in. standard, one ¾-in. by 7-in. and one ¾-in. by 10-in. bolt, one offset clamp and one T head screw. This outfit can be used on the T slot of any machine tool. In connection with the offset clamp, it will hold any thickness from that of a piece of paper to the full length of the bolt or rest. The ¾ x 30 in. drill press bolt can be used through the center of the drill press table or horizontally in connection with angle irons, and is useful wherever a temporary bolt is of service.

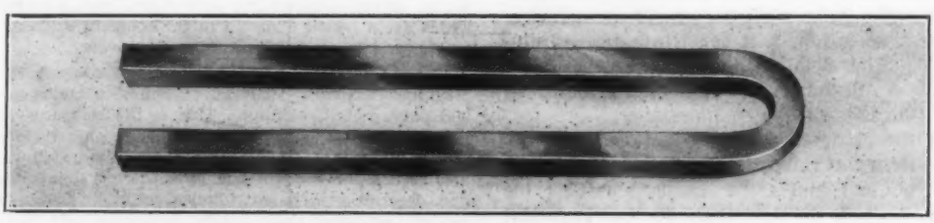


Fig. 3.—The Red Wing Adjustable Bolt and Clamping Devices.

National Founders' Association Officers.

Last week *The Iron Age* reported all but the closing session of the National Founders' Association convention in New York City, November 9 and 10. At this session held in the Hotel Astor Wednesday afternoon, November 10, the principal business was the election of officers for the ensuing year. For the Nominating Committee, consisting of C. Bermingham, A. C. Pessano, I. W. Frank, Otto Falk and G. E. Emmons, the last named presented the following ticket, which was duly elected:

President, O. P. Briggs, Minneapolis, Minn.

Vice-President, C. M. Jarvis, P. & F. Corbin Company, New Britain, Conn.

Secretary, F. W. Hutchings, Detroit, Mich.

Treasurer, the People's State Bank, Detroit, Mich.

DISTRICT COMMITTEES.

First District.—F. D. Wanning, Birmingham Iron Foundry, Derby, Conn.; James F. Lanigan, Davis Foundry Company, Lawrence, Mass.; Thomas W. Fry, Sullivan Machinery Company, Claremont, N. H.; Henry B. Sargent, Sargent & Co., New Haven, Conn., and E. A. Jones, E. D. Jones & Sons Company, Pittsfield, Mass.

Second District.—H. D. Miles, Buffalo Foundry & Machine Company, Buffalo, N. Y.; G. H. Johnson, Isaac G. Johnson & Co., Spuyten Duyvil, N. Y.; S. L. Moore, Moore Bros. Company, Elizabethport, N. J.; Norman J. Gould, Gould's Mfg. Company, Senaca Falls, N. Y., and F. E. Wheeler, International Heater Company, Utica, N. Y.

Third District.—J. H. Schwacke, William Sellers & Co., Inc., Philadelphia, Pa.; W. R. McClave, McClave-Brooks Company, Scranton, Pa.; Stuart R. Carr, Stuart R. Carr & Co., Baltimore, Md.; Thomas Shipley, York Mfg. Company, York, Pa., and C. J. Mesta, Mesta Machine Company, Pittsburgh, Pa.

Fourth District.—Omar N. Steele, American Shipbuilding Company, Cleveland, Ohio; Chester M. Culver, Murphy Iron Works, Detroit, Mich.; R. H. Jeffrey, Jeffrey Mfg. Company, Columbus, Ohio; William Gilbert, Buckeye Foundry Company, Columbus, Ohio; Irving H. Reynolds, William Tod Company, Youngstown, Ohio.

Fifth District.—Edward H. Dean, Dean Bros. Steam Pump Works, Indianapolis, Ind.; H. T. Hornsby, United Iron Works Company, Springfield, Mo.; D. F. O'Neil, Western Foundry Company, Chicago, Ill.; W. O. Bates, Bates Machine Company, Joliet, Ill., and F. C. Caldwell, H. W. Caldwell & Sons Company, Chicago, Ill.

Sixth District.—Otto H. Falk, Falk Company, Milwaukee, Wis.; Oliver Crosby, American Hoist & Derrick Company, St. Paul, Minn.; Theodore O. Vilter, Vilter Mfg. Company, Milwaukee, Wis.; Frederick Robinson, J. I. Case Threshing Machine Company, Racine, Wis., and A. J. Brawley, South Park Foundry & Machine Company, S. Paul, Minn.

Seventh District.—S. H. Chapman, Ontario Wind Engine & Pump Company, Toronto, Ont.; J. A. Milne, Allis-Chalmers-Bullock, Ltd., Montreal, Que.; L. L. Anthes, Toronto Foundry Company, Ltd., Toronto, Ont.; C. H. Waterous, Waterous Engine Works Company, Ltd., Brantford, Ont., and J. A. Kilpatrick, Canada Iron Corporation, Ltd., Hamilton, Ont.

Eighth District.—William J. Oliver, Wm. J. Oliver Mfg. Company, Knoxville, Tenn.; W. D. Tynes, Hardie-Tynes Mfg. Company, Birmingham, Ala.; G. T. Thayer, South Side Foundry & Machine Works, Charleston, W. Va.; W. S. Mosher, Mosher Mfg. Company, Dallas, Texas, and Exile Birkitt, Southern Engine & Boiler Works, Jackson, Tenn.

It remains for these committees to select their chairmen and vice-chairmen who, with the president and vice-president of the association, will constitute the Administrative Council. The Nominating Committee also recommended that the Administrative Council re-employ A. E. McClintock, Chicago, Ill., as commissioner.

In resigning the chair to the president-elect, the retiring president, Henry A. Carpenter, spoke appreciatively of the support he had had from members during his term of office, and again thanked them for the beautiful token of regard, the loving cup, presented to him at the banquet on Monday evening. President Briggs was then escorted to the chair, and in a concise review of the history of the association with special reference to its labor troubles, showed how remarkably they had been reduced, and particularly in the last two years. He indicated briefly the lines on which the association's work should be continued, and promised to serve the association to the very best of his ability.

At the request of President Briggs, William Butterworth, of Deere & Co., Moline, Ill., told how the manufacturers of Moline, Rock Island and Davenport have been dealing with their labor problems and referred at some length to Deere & Co.'s workmen's insurance and pension systems. For the first the men themselves are required to contribute half and the company supplies the other half. The men are assessed 50 cents a month when they are assessed at all, but occasionally a month is skipped, so that at the present they are giving only about 25¾ cents a month on the average. The pension fund is contributed entirely by the company. Each employee after he reaches the age of 65 may retire on a pension, which he receives whether or not he engages in other work. The pension depends upon the individual's length of service and is made a certain per cent. of the wages which he has received in the last 10 years. The company at present employs about 1200 men and has been unusually successful in maintaining a satisfied force. Following this address, in which a very considerable interest was shown, the meeting adjourned.

Trade Publications.

Gas Engines and Producers.—New York Engine Company, 165 Broadway, New York City. Catalogue, 6 x 9 in.; 24 pages. Describes in detail the producer gas engines which the company makes in sizes up to 1000 brake hp. and the complete suction gas producer plants which the company also builds to operate them. An illustrated description of the producer and engine was given in *The Iron Age*, November 4, 1909.

Cable Drills.—Keystone Driller Company, Beaver Falls, Pa. Catalogue No. 4, 8¼ x 11¼ in.; 36 pages. Keystone cable drills for blast hole drilling in cement quarries, crushed stone quarries, mines and excavations of all sorts are described here and outline drawings of apparatus, which is similar in many ways to an electric cable well drill, are shown, together with a number of views of the machine in operation. Several testimonials from contractors and mine superintendents are included, and a number of standard machines are shown with dimension tables and price-lists. Repair equipment and supplies are briefly referred to and illustrated.

Punching and Shearing Machinery.—Rock River Machine Company, Janesville, Wis. Catalogue D, 6 x 9 in.; 63 pages. Heavy machine tools for working plates, bars and structural material are treated of, including single end punches of some of the largest known types, punch and angle shears, plate bending and straightening rolls, bar and billet shearing machinery, combined power punching and shearing equipment, bulldozers and similar machinery.

Electric Motors.—Wagner Electric Mfg. Company, St. Louis, Mo. Bulletin No. 88. This bulletin is aptly described as a picture book as it is in the main a collection of views illustrating the applications of Wagner single phase and polyphase motors to the driving of machinery in several industries, including cement mills, woodworking and machine shops, carriage factories and farming implement plants. The descriptive matter is as brief as it can be made, amounting merely to captions for the engravings.

Grinding and Polishing Machinery.—Diamond Machine Company, Providence, R. I. Catalogue D, 6 x 9 in.; 216 pages. Grinders of almost every description are shown in this catalogue, ranging from portable emery grinders to heavy roll grinding machines weighing 6000 lb. Surface grinding machines, wet tool grinding machines, special grinding equipment, such as skate grinding machines, automatic knife grinding machines, gun barrel machines and the like are shown and described. Motor driven grinders for both direct and alternating current, which are a recent addition to the company's line, are also illustrated, and tables of dimensions are given.

Metal Working Machinery.—Waterbury Farrel Foundry Machine Company, Waterbury, Conn. Catalogue, 6 x 9 in.; 205 pages; cloth binding. This is the company's general catalogue, covering by chapters each of the various classes of equipment manufactured. Separate illustrated catalogues are also issued for each of the lines, giving detailed specifications and descriptions of individual machines. This, however, is a general reference book, briefly reviewing only the most prominent types of machines. The contents can be most briefly in-

dicated by a list of the chapter headings: Rivet, bolt and nut machinery; butt and hinge machinery; cartridge machinery; drop presses and drop hammers; foot and screw presses; machinery for rods and tubes; hydraulic machinery; knuckle joint presses; special lathes; single acting open back presses; single acting pillar presses; double acting power presses; rolling mills; shears and slitters; finishing machinery for sheet metal; muffles and furnaces; and wire drawing machinery. The table of contents at the front and a very complete index at the back refer to the subject matter by paragraph numbers.

Coil Boilers.—Monitor Steam Generator Mfg. Company, Landisville, Pa. Booklet. Boilers for steam, hot water and vapor heating systems of the coil type are shown and sectional views, such as an end view of the boiler showing the arrangement of coils, and views of the base and grate are included. A number of buildings in which the boilers are in use are illustrated and a list of users is given.

Automatic Hose Couplers.—Brown Automatic Hose Coupling Company, 218 Superior Building, Cleveland, Ohio. Booklet. Describes an automatic hose coupler particularly for air lines supplying pneumatic tools. It is a coupling and valve combined, for when it is separated it automatically shuts off the air supply. In coupling it automatically locks and turns on the air. Illustrations of couplings in use and others illustrating the manner of making and breaking connections are given.

Heavy Duty Corliss Engines.—Wisconsin Engine Company, Corliss, Wis. Bulletin C-4. This is one of a series of bulletins to be issued by the company covering the various types of machinery it builds, and is sent out with a cover arranged to accommodate succeeding bulletins covering similar types of engines. A description of the history of the manufacture of the Corliss engine is given and there follow illustrations of the company's shop, together with views of a tandem compound engine, a horizontal cross compound engine, horizontal vertical compound engine and similar equipment. The more important parts of the machine are described and some horsepower tables of different sized engines made by the company are given. The reading matter is concise and the book is artistically decorated.

Small Motors and Electric Blowers.—Emerson Electric Mfg. Company, St. Louis, Mo. Three bulletins. No. 3137, replacing Nos. 3130 and 3132, describes single phase induction motors made in from 1-15 to 1-5 hp. sizes, of full load automatic start type for intermittent service. No. 3308, replacing No. 3306, describes electric blowers for hot air furnaces for residence use, and No. 3309, replacing No. 3307, describes electric forge blowers directly connected and designed for direct and alternating current.

Feed Water Heaters.—Harrison Safety Boiler Works, South Philadelphia Station, Pa. Catalogue No. 360, 6 x 9 in.; 104 pages. A sub-title of this catalogue is "How to Utilize Exhaust Steam Profitably," and after a brief description of the Cochrane open feed water heater, fully two-thirds of the book is occupied by descriptions and illustrations of different ways of employing exhaust steam, such as for heating, drying, evaporating, heating water for boiler feeding and for use in dye works, tanneries, bleacheries, paper mills, &c. An interesting chapter is entitled "The Possibilities of a Pound of Steam," in which it is pointed out that at the best only 10 or 12 per cent. of the total energy in steam can be converted into mechanical work and that the remainder still in the exhaust of an engine or turbine is good for most of the purposes for which steam is employed. There is also a chapter on condensing plants.

Milling Machines.—Kearney & Trecker Company, Milwaukee, Wis. Catalogue 17, 6 x 9 in.; 80 pages. Covers a line of plain and universal milling machines. The Milwaukee standard universal machine is illustrated with front and rear views, and the various parts, marked with red reference figures, are named in tables beneath. A very complete description with numerous detail views follows. The more important attachments are shown separately, including vertical spindle, rack cutting, universal milling (described in *The Iron Age, October* 28, 1909), and slotting attachments; plain, universal and spiral universal centers, rotary table, vises, chucks, collets, &c. Operations are illustrated, such as face milling a traction engine cylinder, milling a knee gib, &c. There follow illustrations of the different sizes of both plain and universal milling machines, with tables of specifications and dimensions. Special cutters and sets of tools for the different machines and some cutter speed diagrams are also shown.

Power Pumps.—Goulds Mfg. Company, Seneca Falls, N. Y. Booklet. Describes in condensed form a general line of power pumps, including house supply and boiler feed pumps, plunger pumps, mining pumps, irrigation pumps, &c. Miniature views of buildings and plants in which the company's apparatus is installed are shown, and some interesting illustrations of pumping equipment in operation in mines.

Steam Engine Indicators and Appliances.—Trill Indicator Company, Corry, Pa. Catalogue, 6 x 9 in. Steam engine indicators, gas and oil engine indicators and reducing wheels, which are specialties of this company, are fully described, together with other indicators designed to meet special conditions. Planimeters for determining the area of cards are also mentioned, and indicator cocks and supplies are shown. A number of characteristic diagrams from engines of various types are compared with faulty diagrams.

Autogenous Welding.—Davis-Bournonville Company, 90 West street, New York City. Catalogue, 6¾ x 10 in., 32 pages. Defines autogenous welding, indicates the advantages of the oxy-acetylene process of doing it, and enumerates typical uses of the process. The use of the oxy-acetylene torch for cutting steel and iron is also dealt with. Numerous illustrations show work performed with the Davis-Bournonville torch, which latter is described in detail. The various styles and sizes of torches made and their interchangeable tips are listed. The Davis acetylene pressure generator is also described; a sectional view shows its construction and makes its operation clear. Apparatus for generating acetylene is similarly presented and special reference is made to oxygen and acetylene pressure regulating valves used to reduce the pressure from the source of gas supplies to the work. A table gives the weights and dimensions of generating apparatus and another the approximate cost of oxy-acetylene welding and cutting. Attention is called to the demonstrating and developing plant maintained by the company at Marion, N. J.

Bench Lathes, &c.—The American Watch Tool Company, Waltham, Mass. Catalogue, 6 x 9 in.; 86 pages. Particularly illustrates and describes the company's line of precision bench lathes and accessories, but also shows other machines for manufacturing watch, clock and meter movements and other small parts, including filing machines, grinding machines, small milling machines, pinion cutters and profiling machines. Space is also given to wire chucks, cutters, drills and attachments.

Marine Engine Castings.—Valley Boat & Engine Company, Baldwinsville, N. Y. Catalogue, 6 x 9 in.; 16 pages. This company makes a specialty of marine engine castings and machined parts for amateur mechanics and boat builders, and several types of engines and some samples of the finished machined parts are shown and prices listed.

Electrical Sheets.—West Penn Steel Company, Brackenridge, Pa. Bulletin No. 1. Gives the electrical properties of two grades of steel sheets made for the laminated cores of motors, generators, transformers, &c. Both are shown to be of especially excellent quality for use in electrical apparatus.

Punching and Shearing Machines, &c.—Covington Machine Company, Covington, Va. Catalogue, 6 x 9 in.; 28 pages. Shows a line of punching and shearing machines, and special attention is called to a two-speed arrangement used on double punches on which change gears are supplied if required. A single punching machine which is fitted with an automatic stop without springs is shown, and the illustrations include universal plate bar and angle shears and a combined universal punch and shear. Bending rolls and an elliptical boring, turning, facing and milling machine are briefly referred to.

Concrete Mixer.—Waterloo Cement Machinery Corporation, Waterloo, Iowa. Catalogue, 6 x 9 in.; 67 pages. Describes carefully and clearly the construction and action of the Polygon concrete mixer. The drum is the particular feature; in axial section it is octagonal and in transverse section circular. In other words, it is in the form of a short cylinder with frustrums of cones above and below. Its axis of rotation is not coincident with its geometrical axis, but is diagonal. The peculiar form causes the contents to be thrown endwise, sidewise and crosswise, and interior vanes serve to still further thoroughly mix the batch. Other parts in the construction and drive of the complete machine are explained, and some space is also given to accessory equipment—steam and gasoline engines, boilers and concrete elevators, &c.. Concrete dump carts and spreaders are also taken up and views of the apparatus in use are included.

Fans, Engines, &c.—American Blower Company, Detroit, Mich. Catalogue 259 E. A booklet briefly covering all of the more important of the company's products prepared for foreign circulation. It is being reproduced in Spanish and Portuguese for the Latin-American countries. The descriptive matter is necessarily condensed and embraces A. B. C. vertical inclosed self-oiling steam engines, centrifugal fans and blowers, fan systems, heating, ventilating and mechanical draft apparatus, special drying systems, &c.

Blowers, Economizers, Engines, &c.—B. F. Sturtevant Company, Hyde Park, Mass. Condensed catalogue, No. 165. Covers briefly all of the company's products, including blowers and fans for all purposes and their accessory equipment; pneumatic conveying systems, with separators, &c.; forges of several different types, exhaust heads, steam traps, economizers, air heaters, steam engines, electric motors and generators, steam turbines, &c.

Flaming Arc Lamps.—The Excello Arc Lamp Company, 30 East Twentieth street, New York City. Two booklets and two bulletins. Bulletin No. 101 shows the 1909 model of the Excello flaming arc lamp and No. 103 calls attention to a revision of the company's system of nomenclature. One of the booklets describes the Excello flaming arc lamps in considerable detail, and the other shows a collection of views of the older and best known installations in and around New York City.

Twist Drills.—Cleveland Twist Drill Company, Cleveland, Ohio. Folder. The Paragon drill, which is a drill twisted from a flat bar instead of being milled from round stock, is briefly described, and prices of drills, shanks and sockets made by the company are listed.

THE IRON AGE

Established in 1855.

New York, Thursday, November 18, 1909.

Entered at the New York Post Office, as Second Class Mail Matter.

DAVID WILLIAMS COMPANY, - - - - - PUBLISHER
14-16 PARK PLACE, NEW YORK

CHARLES T. ROOT, - - - - - PRESIDENT
CHARLES KIRCHHOFF, - - - - VICE-PRESIDENT
W. H. TAYLOR, - - - SECRETARY AND TREASURER

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The Foundry Employers' Movement.

In late years the conventions of the two leading organizations of employers in the metal working trades—the National Founders' Association and the National Metal Trades Association—have given cumulative proof that both have found the lines on which their work can be most effective. It is more and more recognized that the chief object of the convention is to check up the work of the year and take account of progress, rather than to discuss questions of policy. Since neither association is on terms of conference with a labor union, the matters of difference between the union and the association are no longer subjects of fervid debate. While it is true that the members of the National Founders' Association have a larger percentage of union men in their foundries than are employed in the machine shops of members of the National Metal Trades Association, little more attention is given to the union in one organization than in the other. Whatever relations exist with a labor organization are maintained by the individual proprietor or firm, and these cases are by no means as numerous in the foundry trade as they were prior to the great strike of May, 1906.

The two years since the panic have given opportunity for the development in a positive way of the work of the National Founders' Association. They have been years of freedom from strife and they have been years in which the study of economies has been forced upon every foundry manager. Thus the best opportunity has been given for developing the possibilities of the molding machine, for example, making ready for the time when it must be operated at its highest efficiency to meet the greatest demand ever made upon the foundries of the country.

This period of restricted foundry operations has also permitted the National Founders' Association to develop its plans for increasing the supply of molders. As pointed out in the report of the association's commissioner, A. E. McClintock, at last week's convention, the two lines of effort to which most attention has been given since 1907 are the training of new workmen and the use of molding machines and other labor-saving equipment to the largest possible extent. It is true that in this work the members of the National Founders' Association are serving the entire foundry trade, and that benefits will be reaped by founders who are bearing no share of the expense. Perhaps, however, this is only comparable to the case of the labor unions, whose members make large expenditures for a betterment of conditions in which nonunion workmen share. What is significant in the educational movement in the employing foundry trade is that proprietors no longer stop to calculate whether others will be benefited by their expenditure of time and money to better conditions.

One who has attended the conventions of the National Founders' Association year after year has not failed to notice a change of sentiment as expressed in the reports of officers and in discussion on the floor. Employing founders seem to have much less objection to the payment of liberal wages than was the case a few years ago. The explanation seems to be that as restrictions on output are removed the employer is less disposed to haggle over increased pay. The whole problem is resolving itself into one of lower unit cost to the employer with higher wage to the employee. The presidential addresses of the last few years have driven home the desirability of liberal treatment of foundry workmen. Narrow minded employers who take the position that every demand for more wages is to be fought are being educated to see that only as employers' organizations guarantee better conditions to workmen than unions have secured can they hope to make ground with the open shop idea.

Foundrymen who have seen the ups and downs of their trade in the past 10 or 15 years are not apt to be lulled into any false feeling of security by the absence of labor troubles since 1907. They have learned that the compensation for slack business is the opportunity it gives for getting their house in order against the time when there will be more jobs than molders. It is evident that many have taken full advantage of the quiet time now fortunately over, to put the operation of their foundries on a basis that will yield a better return to themselves and to their workmen when the day of overfull order books comes again.

The Shop Scrap Heap and Its Lesson.

A machine tool builder, in discussing the proposed purchase of an automobile, said that he would not buy a car of a certain make because he knew the company making it had no scrap heap. He had been in the works several times in the course of business and had observed that few if any rejections of parts had been made. Knowing from experience that production cannot go on commercially and keep always within the limits of ordinary accuracy, he held the product in suspicion. The blame he placed on the inspection department, which was either inefficient in its system or was not backed up by the management, represented in the plant by the superintendent and his foremen. The effort to secure a maximum showing of production had, perhaps, overshadowed the fact that where inspection is lax the expense for replacement and repair is large and costs are increased instead of decreased. They even become cumulative where weakness appears in any mechanical contrivance of more than ordinary simplicity.

Insufficient inspection and rejection are brought to light in another manner. Where machine shops are asked to figure on work, such as, for example, a lot of automobile parts, the limits of accuracy furnished are usually very small. A quarter of a thousandth of an inch is not an uncommon specification, and three thousandths is considered large. But experience has shown that the same people who require very accurate work when it is done by outsiders do not always live up to such limits when similar parts are manufactured in their own factories. From the standpoint of ultimate profits of the

owners such a condition is not a good one. As already stated, it is in the long run expensive. Apart from direct costs, reputation of product is injured. The blame may really go back to the manager. His attitude toward the shop may be such as to induce the superintendent to avoid every possible show of waste, and the influence of the office passes along to the inspectors. It is a penny wise pound foolish policy always to permit inferior products to leave a works. Design should be such that each part and operation should have a standard in material and accuracy in finish, beyond which it is unnecessary to go, and below which means the scrap pile. Shops with high reputations for mechanical production carry inspection to the extreme of care. Inefficiency in this respect is apt to be confined to works where mechanical parts are adjuncts of the product, but even shops which build machine tools vary greatly in the comprehensiveness of their inspection.

The Running Balance of Revolving Parts.

The desirability of a running balance of revolving machine parts will be more and more appreciated as time goes on. It constitutes a refinement of production which is very much more important than is generally understood. Wood working machinery manufacturers have realized its necessity in their machines, because of the very high speed required. The greater the rotary speed the greater is the wear resulting from lack of balance. Now that metal working machinery has been increased in speed and weight, grinders and drills, for example, being comparable in respect to speed with wood-working tools, the need of running balance has become an element not to be disregarded.

One prominent builder of grinding machinery found from tests that at present a very small per cent. of the revolving parts ran in perfect balance, and devised means for correcting the defect. As a result a new machine will soon be put on the market upon which any revolving body with cylindrical surfaces up to considerable diameter and length can be adjusted to run absolutely in balance. It was found that static balance is of small importance, but that running balance is necessary. A part made up of pieces each ground to as perfect a cylindrical form as possible on high class machines almost always is somewhat out of true running balance. Lack of perfect balance aggravates wear of bearings, which in turn causes vibration and a loss of accuracy, requiring a frequent renewal of parts. The cost of making the corrections in the distribution of weight is not great. When it is remembered that a few ounces of material at a radius of 3 in. at 1000 rev. per min. will exert a force of some 40 lb., the value of the correction is apparent.

At the recent meeting of the National Machine Tool Builders' Association the question was asked of an expert representing builders of electrical equipment, if motors were put in perfect running balance. His answer was that the subject had not been given attention, so far as he was aware. A builder of grinding machinery made the statement that according to the experience of his company no motor had been found that could be mounted direct on the grinding machine spindle, or, in fact, on any part of the machine. The practice is to put the motor on the floor as far from the machine as possible; otherwise vibration is transmitted to the work, showing itself in wave marks. He expressed the opinion that if the armature of a motor could be put in running balance vibration would be avoided and better arranged motor drives for grinding machines would be possible.

The question is a new one, or, at least, it has been the subject of little public discussion as yet. Doubtless each individual machinery builder will take it up in connection with his own product. It should be remembered that, with the higher speeds obtainable since the introduction of the new cutting steels, new conditions have arisen, and no one can afford to overlook the experiences of those who have met one of the problems involved and solved it.

The Tariff on Scrap Not Intended for Melting.

The recent decision of the Treasury Department on the portion of paragraph 118 in the metal schedule of the tariff of 1909 relating to scrap has left the question of duties on old material very much befogged. The paragraph in full is as follows:

> 118. Iron in pigs, iron kentledge, spiegeleisen, and ferromanganese, $2.50 per ton; wrought and cast scrap iron, and scrap steel, $1 per ton; but nothing shall be deemed scrap iron or scrap steel except waste or refuse iron or steel fit only to be remanufactured by melting, and excluding pig iron in all forms.

The last nine words are added to the paragraph as it appeared in the Dingley Tariff. The decision of the Treasury Department was on a question presented by the Collector of Customs at Philadelphia. It was in effect that no scrap iron or scrap steel is entitled to classification under paragraph 118 unless it is unfit for use until reduced by heat from a solid to a fluid state; therefore, that scrap iron or scrap steel which may be remanufactured by being subjected to heat and then rolled or hammered to the form desired is not scrap within the meaning of the new paragraph.

It may have been the intention of the framers of the new act to provide a separate duty for scrap imported for rolling or hammering into a new product after passing through a heating or busheling furnace. But the fact remains that such material cannot come in as scrap. Customs officials at Washington, while not willing to make any ruling in the absence of a definite issue, intimate that in the case of any lot of scrap brought in for remanufacture without melting, duty would be imposed under some one of the various classifications in the metal schedule apart from paragraph 118. In the iron trade one view taken since the question came up for discussion is that resort must be had to the "dragnet paragraph," No. 480, providing that "there shall be levied, collected and paid on the importation of all raw or unmanufactured articles not enumerated or provided for in this section, a duty of 10 per centum ad valorem, and on all articles manufactured, in whole or in part, not provided for in this section, a duty of 20 per centum ad valorem."

On the other hand, the Treasury Department may take the view regarding certain importations, heretofore classified as "scrap," that they must pay the same duty as that provided for new material in the same form. If rerolling rails, for example, or old locomotive tires bought to be rolled into shovel plate, should be assessed the same duty as for new rails or new tires, their importation under some conditions would be out of the question. In the case of old rails the duty would thus be $3.92, or 8 cents less than the old duty on scrap. Old tires, under such a ruling would be assessed 1¼ cents a pound—an absolutely prohibitory duty.

As the matter stands, importers of scrap that is not intended to be melted in the foundry cupola or in the basic open hearth furnace are entirely at sea as to the amount they must pay to get the material into the country, and naturally will be wary of trading with foreign

sellers. And even in the case of certain scrap brought in for remelting there is no assurance that the customs collector will decide that it is "fit only to be manufactured by melting." Since rulings are made only as cargoes come in, the importation of old material promises for some time to partake of the uncertainties of a lottery.

The Noiseless Machine Shop.

Noisiness is fast disappearing from the modern machine shop. Chiefly this change is desirable, because loud or shrill sounds may transmit vibration to the work surface through cutting tools or abrasive wheels, and some noises may affect the usefulness of workmen by getting on their nerves. Some noises are unavoidable and can be heard above the usual hum of industry. Some rasp on the ear as well as mar the work with vibration marks. Others, while doing no harm to work, have the effect of setting the nerves of some men on edge. The squealing shriek of a slipping planer belt is not pleasant, to say the least. Many motor drives make noises all out of proportion to the need. There can never be complete quiet in a shop, of course, but many of the individually conspicuous noises can be eliminated.

The value of quiet in connection with the visits of customers is pointed out as worth taking into account. If his own works are equally free from harsh sounds he may not be conscious of the condition. But let him go into the old-fashioned machine shop, or a modern shop in which no attention has been paid to the matter, and the impression conveyed is not a good one. On the other hand, the visiting owner of a noisy shop will be struck by the orderly quiet. One manufacturer cites the advantage while showing his product to customers in being able to make himself understood as he explains the merits and operations of a machine. There are plenty of machine shops in portions of which conversation is impossible unless shouting is resorted to.

To reduce the noisy shop to a quiet one is not so difficult as might be presumed. The newer machinery is much quieter than the old. It runs more smoothly, for it is better designed and better made. If each new piece of equipment is studied in connection with its installation and the attempt made to remedy the sound producing elements as they exist in older machines the change resulting in a short time seems marvelous. The noise question is receiving much attention at the present time, as a requisite of healthful existence in every day life. The machine shop is a place where human beings are employed to do careful and skilful work. Distracting influences are therefore to be avoided and useless noise may be classed with poor light and ventilation and other unwholesome conditions, as a sanitary evil.

CORRESPONDENCE.

The Carnegie Steel Company and the Escanaba Furnace.

To the Editor: In *The Iron Age* of November 11 I observe an article headed "Iron Trade Reminiscences," being an excerpt from the remarks of Joseph G. Butler, Jr., at the recent dinner to Chairman Gary. Mr. Butler makes an interesting statement with regard to the Escanaba Furnace, alleging that the first blast furnace started by the Carnegie Steel Company was removed to Escanaba, Mich. The statement is extremely interesting to those of us whose memory runs back to the time when this furnace was built. Mr. Butler has got his facts twisted. Instead of this furnace having been removed to Escanaba, it was moved from there to Pittsburgh. It was built in 1872-3, was put in blast in 1873 and was only operated for a short time. After standing idle for several years, the Edgar Thomson Steel Company, now owned by the Carnegie Steel Company, purchased the furnace and removed its equipment to Braddock, Pa., and built with the materials the first furnace of that plant. Up to that time the Edgar Thomson Steel Company had purchased its pig iron. The furnace at Escanaba was only a small one, being 51½ ft. high and 12 ft. in diameter at the bosh. When it became Furnace A of the Edgar Thomson plant it was enlarged somewhat, its size then being 65 x 13 ft. It was equipped with much better blowing apparatus, and its product was large for those days. This statement may make Mr. Butler's remarks on this point lose their humor, but the truth of history requires it to be given.

AN OLD TIMER.

Annual Meeting of the American Society of Mechanical Engineers.

The thirtieth annual meeting of the above named society will be held in the Engineering Societies' Building, 29 West Thirty-ninth street, New York, December 7 to 10.

The entire social entertainment will be in charge of the members resident in and about New York, under the immediate direction of a local committee appointed by them, of which William D. Hoxie is chairman. For Wednesday afternoon, December 8, an excursion is planned, which members and guests will be asked to attend in a body, and during the balance of the time there will be opportunities for smaller parties to visit places of interest. In the evening there will be a lecture for members and guests on the subject of agricultural machinery.

The professional papers assigned to the meeting are as follows: "Tests on a Venturi Meter for Boiler Feed," by Charles M. Allen; "The Pitot Tube as a Steam Meter," by George F. Gebhardt; "Efficiency Tests of Steam Nozzles," by F. H. Sibley and T. S. Kemble; "An Electric Gas Meter," by C. C. Thomas; "Tan Bark as a Boiler Fuel," by David M. Myers; "Cooling Towers for Steam and Gas Power Plants," by J. R. Bibbins; "Some Studies in Rolling Mill Engines," by W. P. Caine; "An Experience with Leaky Vertical Fire Tube Boilers and the Best Form of Longitudinal Joint for Boilers," by F. W. Dean; "Testing Suction Gas Producers with a Koerting Ejector," by C. M. Garland and A. P. Kratz; "Bituminous Gas Producer," by J. R. Bibbins; "The Bucyrus Locomotive Pile Driver," by Walter Ferris; "Line Shaft Efficiency, Mechanical and Economic," by Henry Hess; "Pump Valves and Valve Areas," and "A Report on Cast Iron Test Bars," by A. F. Nagle. In addition to the above papers there will be several valuable reports submitted by committees of the gas power section.

The Parkersburg Iron & Steel Company's Fire.—On the evening of November 10 fire was discovered in one of the large warerooms of the factory department of the Parkersburg Iron & Steel Company, Parkersburg, W. Va., which at the time was filled with a large quantity of dripping pans, iron bread pans and tin pans, all sold and waiting for shipment. The wareroom with its contents was completely destroyed, but the loss is fully covered by insurance. The fire will in no way affect the operations of the company's mills or its factory, but it exceedingly regrets the inconvenience thus caused to some of its customers by failing to make deliveries as promised on the lines of product noted. All its sheet mills and its factories went on full time on the night of November 14, and there will be no interruption whatever to operations or deliveries.

The plant of the Solid Steel Casting Company, Chester, Pa., which recently went into the hands of a receiver, was sold November 9 at public sale. It was sold subject to a mortgage of $100,000, on a bid of $100 above that amount, to Thomas Ridgway, representing unknown purchasers.

Progress at the Gary Works.

Following is a report of conditions at the great Gary Works of the Indiana Steel Company, subsidiary of the United States Steel Corporation:

Two new blast furnaces will be blown in at Gary this month, Nos. 7 and 8. This will make six furnaces in blast by December 1, namely, Nos. 7, 8, 9, 10, 11 and 12, with a total capacity of about 75,000 tons per month or 900,000 tons per year. Two other furnaces are nearing completion, carrying out the general plans which have long been under way.

Since the Gary plant first began to make iron, nearly a year ago, steady progress has been made in bringing in additional capacity. The first two furnaces completed, Nos. 11 and 12, were blown in during December, 1908; No. 10 in January, 1909; No. 9 in June 1909, and during this month, as stated, Nos. 7 and 8 will be blown in.

The rail mill was started in February, 1909, and its recent operations have kept pace with the supply of steel available from the blast furnaces and open hearth plants. This mill is rated at 900,000 tons annual capacity, but it is actually capable of rolling 4000 tons in 24 hours, which would make 1,200,000 tons for the year.

The billet mill was started in August, 1909, its capacity being rated at 1,000,000 tons annually, its actual output being limited, of course, by the tonnage of ingots that may be available for it outside of the requirements of the rail mill, and influenced also by the need for billets in the mills of the corporation in the Chicago District.

The 14 and 18 in. bar mills are practically completed, a little work remaining to be done on the buildings, and the machinery is now under construction for the three smaller mills, two of which are known as Nos. 1 and 2 12-in. mills, while the third is known as No. 1 10-in., the expectation being ultimately to have a second 10-in. mill.

In the open hearth plant two units of 14 furnaces each are completed and the third unit is under construction, the furnaces being all of 60 tons capacity. One complete unit and half of the second have been in operation, comprising 21 furnaces, and the remaining seven furnaces of the second unit will be in use as soon as the two new blast furnaces above mentioned are blown in. Each furnace is rated at over 50,000 tons annual capacity. The production of ingots this fall has been at the rate of about 75,000 tons monthly, which will be increased to 100,000 tons when the six blast furnaces are going.

All the mechanical shops in connection with the Gary Works have been completed. The slip and turning basin are finished, and one-half of the outer breakwater has been completed.

The universal plate mill and the axle mill are under construction, and a by-product coke plant of 560 ovens is also under way.

The new billet mill was completed just in time to relieve a strained situation in the Chicago plants of the corporation. It is customary in a steel plant with several finishing departments to have more rolling capacity in the aggregate than the tonnage of steel ingots. This arrangement, which has prevailed in the Chicago plants, grows out of the fact that it is seldom that all the finishing departments are operated concurrently at full capacity during normal times. The extraordinary conditions which have prevailed this fall have thrown every finishing departmemnt far behind in its specifications, with the exception of the rail mills, and under these conditions the output of finished products has been limited by the available supply of crude steel. The Gary billet mill was completed just in the nick of time, as it will contribute at least 25,000 tons of billets each month to the various mills in the district. This will go a long way toward supplying the urgent demand for bars and will obviate the necessity of "robbing" the rail, plate and structural mills by taking material from them to prorate the supply among all the finishing departments, thus increasing the product of the mills which use hot metal as well as those which roll from billets.

Steel Corporation Production Records in October.

Reference has already been made in these columns to the fact that a large number of new production records were made in October by the subsidiaries of the United States Steel Corporation. These relate not only to the aggregate of pig iron and steel ingots for all the subsidiaries but to records made by individual Bessemer and open hearth steel works, blooming and billet mills and by rolling mills producing a variety of forms of finished material. In referring to these new records it is not meant that the output was the largest ever made for the particular type of plant mentioned, but that in each case the individual plant exceeded its own best record.

Corrected figures for the total of blast furnaces and steel works products in October for all the subsidiaries are as follows: Blast furnace products, 1,234,275 gross tons, against the best previous record of 1,154,370 tons in September, 1909. Steel ingots, 1,409,465 gross tons, against the best previous record of 1,302,074 tons in September, 1909. October also made a new record for finished rolled products shipped to buyers, taking no account of the semi-finished steel shipped by one subsidiary to another.

The Carnegie Steel Company broke 51 records of its various individual plants in October, the Illinois Steel Company 19, the National Tube Company 35, the American Steel & Wire Company 16, the American Sheet & Tin Plate Company 6, the American Bridge Company 2, the Tennessee Coal, Iron & Railroad Company 8, and the Universal Portland Cement Company 2, making a total of 139. Below are given a few of the new records in gross tons:

Tennessee Coal, Iron & Railroad Company—Ensley Works, No. 1 open hearth furnace, 11,007 tons; best previous record, 8269 tons in August, 1908. Product of all blast furnaces, 73,158 tons; best previous record, 69,350 tons.

American Steel & Wire Company—Schoenberger Works, Bessemer ingots, 31,076 tons; best previous record, 30,953 tons in November, 1904. Mention is made of these Schoenberger records in view of the long interval between them and the fact that the plant is by no means in the modern class.

Illinois Steel Company—Joliet Bessemer works, ingots, 61,363 tons; best previous record, 60,595 tons in May, 1909. Joliet by-product coke ovens (280), 84,455 tons; best previous record, 84,296 tons in August, 1909. Total product of all the blast furnaces of the company, 249,592 tons; best previous record, 239,691 tons in September, 1909.

Carnegie Steel Company—Columbus furnace No. 2, 8935 tons; best previous record, 8453 tons in January, 1902. Total for the two Columbus furnaces, 16,734 tons; best previous record, 16,695 tons in November, 1905. Clairton Steel Works (12 50-ton open hearth furnaces), 63,761 tons; best previous record, 58,038 tons in October, 1906.

The Pennsylvania Inspection Bureau has been organized at Johnstown, Pa., with a capital of $5000, the incorporators being J. C. Wickersham and S. Arch Replogle of Johnstown and James Plummer of Pittsburgh. It is the purpose of the new bureau to make tests of steel, iron, concrete and other building materials. It will also make chemical tests of coal and cement and has already received considerable work in these lines. James Plummer is president; S. Arch Replogle is secretary and treasurer, and J. C. Wickersham is vice-president and manager. The offices are in the Johnstown Trust Building.

The recent purchasers of the Tidewater Steel Company, Chester, Pa., have applied for a charter under the name of the Delaware River Steel Company. The blast furnace of the company is being put in shape for operation as rapidly as possible, and will probably be ready for blowing in early in January.

The American Steel Foundries.

The seventh annual report of the American Steel Foundries, giving the result of operations in the year ending July 31, 1909, presents the following general profit and loss account:

Earnings from operation of plants and net income of subsidiary companies (after deducting manufacturing, selling, administrative and head and district office expenses, and before deducting depreciation)		$569,439.68
Other income:		
Interest, discount and exchange.	$16,557.00	
Income from investments and loans	19,576.04	
Sinking fund profits	23,003.02	
Miscellaneous	3,990.63	
		63,126.69
Total income		$632,566.37
Deduct:		
Interest on borrowed money	$1,464.00	
Interest on debentures	137,472.00	
Interest on bonds:		
Outstanding	$183,620	
In sinking fund	48,680	
	232,300.00	
Bond sinking fund installment and profits	128,003.02	
Depreciation of buildings, plant and equipment (all properties)	113,481.40	
		612,720.42
Balance—net income		$19,845.95

The balance sheet as of July 31, 1909, is as follows:

Assets.

Real estate, buildings, plant, machinery, tools, equipment, patents and goodwill:		
As per balance sheet of July 31, 1908	$19,912,251.03	
Additions during the year	48,844.33	
	$19,961,095.36	
Real estate not used for business purposes	298,630.15	
		$20,259,725.51
Sinking fund assets (exclusive of bonds purchased and held by trustees):		
Cash and accrued interest		40,558.20
Securities:		
Company bonds at cost	$95,146.00	
Notes secured by first mortgage	170,000.00	
Miscellaneous securities	124,557.00	
	$389,703.00	
Inventories	3,782,724.30	
Accounts and bills receivable (less reserves)	1,206,618.32	
Cash	218,389.34	
		5,597,434.96
Insurance premiums, &c., prepaid		46,755.98
Total		$25,944,474.65

Liabilities.

Capital stock (authorized and issued): 171,840 shares of $100 each		$17,184,000.00
Bonds and debentures:		
First mortgage 6 per cent. 10-30 year sinking fund gold bonds	$3,500,000.00	
Less redeemed and held by trustees of sinking fund	838,000.00	
	$2,662,000.00	
First mortgage 5 per cent. gold bonds of American Steel Casting Company (due November 1, 1912)	446,000.00	
Four per cent. debentures	3,436,800.00	
		6,544,800.00
Notes payable	$100,000.00	
Accounts payable	440,784.74	
Payroll accrued	105,091.22	
Accrued interest on bonds and debentures	144,311.00	
		790,186.96
Depreciation and renewal reserves		1,015,824.28
Bond sinking fund (accrued since August 1, 1907)		331,371.88
Profit and loss account:		
As per balance sheet of July 31, 1908	$58,445.58	
Net income for the year ending July 31, 1909, as per annexed statement	19,845.95	
		78,291.53
Total		$25,944,474.65

From President Wm. V. Kelley's accompanying statement the following extracts are taken:

It was pointed out in the last annual report that much of the company's tonnage is derived either directly or indirectly from railroads, particularly for cars and locomotives. This class of business was the last to recover from the panic of 1907; in fact, up to the end of the fiscal year it was very small. The miscellaneous steel castings business was also much slower in returning to normal conditions than most branches of the steel trade. As a result, the company suffered severely from the reduced commercial activity which followed the panic; to what extent is best shown by the following comparative statement of gross sales:

Year ended July 31, 1906	$15,297,495.89
Year ended July 31, 1907	19,463,521.05
Year ended July 31, 1908	8,964,188.76
Year ended July 31, 1909	7,138,008.57

The net income of $19,845.95 shown in the accompanying statement is arrived at after deducting all interest and other charges, including $526,700.79 for repairs and maintenance and $113,481.40 for depreciation of fixed properties, and also after appropriating $176,683.02 to increase the sinking fund for the first mortgage bonds, as required by the terms of the trust deed. The latter item, while necessarily a charge against income, is really a setting aside of profits for the purpose of liquidating debt. The resulting retirement of bonds inures to the benefit of the stockholders by increasing the book value of the stock.

Through the operation of the sinking fund $151,000 par value of the first mortgage bonds were retired during the year to July 31, and the accretion since, together with the annual installment payable to the trustees this date (October 1), will purchase at least $152,000 more, making a total retired to date of $990,000 out of the original issue of $3,500,000.

Since the close of the fiscal year there has been a very material increase in the demand for the company's products, and orders in such liberal volume have been secured that it has been found necessary to put all of the company's plants in full operation.

It is believed that, unless some unexpected disturbance of general conditions occurs, a good volume of business will continue. It is therefore felt that the outlook is encouraging and that the result for the ensuing fiscal year should be satisfactory.

A Canadian Steel Merger.

Montreal advices state that on Saturday, November 13 the preliminaries were completed for the consolidation of the Dominion Iron & Steel Company and the Dominion Coal Company, both of Nova Scotia. It is understood that a new company will be formed, named the Canada Steel Corporation, which will have a capitalization of $70,000,000. The consolidation was made possible by the agreement of James Ross of Montreal, president of the Dominion Coal Company, to transfer to a syndicate of Toronto capitalists a portion of his holdings of the company's stock. The Toronto capitalists had already acquired a controlling interest in the Dominion Iron & Steel Company. This consolidation will effectually terminate the disputes which have from time to time arisen between the steel company and the coal company.

The statement is further made that negotiations will now be taken in hand for the merging of the Nova Scotia Steel & Coal Company and the Lake Superior Corporation in the combination above described. If this arrangement goes through the consolidation will be capitalized at $150,000,000 and will be the largest industrial corporation in Canada.

The Youngstown Sheet & Tube Company is completing at Youngstown, Ohio, a large new lap weld furnace, in which it will be able to make pipe up to 20-in., and two new butt weld furnaces. When these furnaces are finished the company will have four lap weld and six butt weld furnaces. The building of eight new sheet mills is progressing and it is expected that these will be ready for operation about January 1. The preparation for foundations and the fabrication of the plate work for the new blast furnace are also under good headway, and it will likely be completed and ready for blast by May 1.

OBITUARY.

A. P. SWINEFORD, who was the first Governor of Alaska, died at Juneau, that Territory, October 19, aged 75 years. He was born at Ashland, Ohio, and in 1855 was admitted to the bar at Oshkosh, Wis. In 1868 he removed to Negaunee and for the next 20 years was connected with newspapers there and at Marquette. In 1874 he published a volume, which was the first to deal comprehensively with the iron and copper mining industries of Lake Superior. He was the first to gather the annual statistics of Lake Superior iron ore production and these were published in the Marquette *Mining Journal*. In 1885 Mr. Swineford was appointed Governor of Alaska by President Cleveland. After his term he returned to northern Michigan and engaged in newspaper work, but for a number of years preceding his death he lived in Alaska.

DR. THEODORE R. TIMBY, Brooklyn, N. Y., died November 9, aged 91 years. He was the inventor of the revolving turret used on vessels of war. Ericsson, inventor of the famous Monitor, received the chief credit for the use of the revolving turret and Dr. Timby's friends frequently complained that his part had not been recognized. It is stated that a royalty of $5000 was paid to him for each of three vessels of which the Monitor was one. He was born in Dover, Dutchess County, N. Y.

NATHAN B. LEWIS, a member of the sales staff of the Republic Iron & Steel Company, died November 6 at his residence in Chicago, aged 65 years. Prior to the organization of the Republic Iron & Steel Company he had been the Chicago representative of the Union Iron & Steel Company, Youngstown, Ohio, and was, therefore, widely known in the Western trade. He served in the Civil War as a drummer boy in the Twenty-fourth Wisconsin Infantry. He leaves a widow.

JOHN E. RANDLE, president of the Chickasaw Iron Works, Memphis, Tenn., died October 23, aged 80 years. He was born in Baltimore, received an academic education and located in Memphis in 1857, where he at once engaged in the foundry business. He leaves a son, H. C. Randle.

COL. THOMAS GREENE BUSH died November 11 while playing golf with some banker friends at the country club near Birmingham, Ala. He was president of the Shelby Iron Company, Anniston Water Supply Company, Mobile & Birmingham Railroad, Gray Iron Ore Company, Coosa Pipe & Foundry Company, Gadsden Pipe Fitting Company and Imperial Coal & Coke Company. He was 61 years old, and leaves a widow and four sons.

ELI EMERY HENDRICK, president of the Hendrick Mfg. Company and Carbondale Machine Company, Carbondale, Pa., died October 25.

Milliken Brothers' Reorganization.—It is understood that the creditors' committee will take the property of Milliken Brothers, Inc., Staten Island, New York, from the receivers within a few days, and that the operation of the fabricating plant, which was to be shut down December 1, will be continued. The reorganization of this enterprise is to be effected by the election of a Board of Directors constituted as follows: Edward C. Wallace, Gates W. McGarrah, John T. Bourne, Arthur A. Fowler, Clarence McK. Lewis, Charles H. Zehnder and William Barclay Parsons. Edward C. Wallace of Wm. H. Wallace & Co., New York, dealers in iron and steel, who is one of the voting trustees, is to be president of the rehabilitated company. It is further stated that the open hearth steel works and structural mill on Staten Island will be started up as soon as the necessary working capital can be raised.

A Berlin cablegram states that the Prussian and Bavarian authorities are discussing the advisability of turning over the entire manufacture of arms and explosives to private firms, owing to the fact that the production of these by the German Government is entailing too great an expense. It is stated that the Krupp Company is about to erect an immense branch arsenal at Ingelstadt in Upper Bavaria.

PERSONAL.

J. A. Farrell, president of the United States Steel Products Export Company, has gone abroad.

John McGeorge and H. W. Woodward have formed a consulting firm under the name of the Cleveland Engineering Company, with offices in the New England Building, Cleveland. Mr. McGeorge has been chief engineer of the Wellman-Seaver-Morgan Company.

T. C. Hicks, formerly superintendent of the Pullman Company's rolling mill at Pullman, Ill., has become superintendent of the Joliet Iron Products Company, Joliet, Ill.

Fritz Gleim, formerly in charge of the Tidewater furnace at Chester, Pa., who went to Italy some months ago, has resumed his connection as director of the iron mines, blast furnaces, coke ovens and Bessemer works on the Island of Elba.

F. W. Horne, sales agent in Japan for numerous American manufacturers of machinery, has been decorated by the Emperor of Japan with the Sacred Order of the Treasury.

George A. Paff, until about a year ago general superintendent of the wire mills of the American Steel & Wire Company at South Sharon, Pa., and now in charge of the plant of the Griswold Wire Company at Stirling, Ill., has been appointed manager of the new rod and wire mills to be erected by the Jones & Laughlin Steel Company at Aliquippa, Pa.

Matthew Scannell, formerly of the Ohio works of the Carnegie Steel Company, Youngstown, Ohio, has been appointed superintendent of the same company's blast furnace at Niles, Ohio.

F. M. Stephenson has resigned as treasurer of the Central District & Printing Telegraph Company, Pittsburgh, to become treasurer of the recently organized Union Sheet & Tin Plate Company, Pittsburgh.

Dr. Joseph W. Richards, Lehigh University, Bethlehem, Pa., will deliver an illustrated lecture on "The Electric Reduction of Iron Ore" at the section meeting of the Franklin Institute, Philadelphia, on the evening of November 18.

W. L. Cooper, manager of Robert W. Hunt & Co.'s European business, sailed November 10 from New York, returning to London after the completion of his annual business trip to the United States.

F. P. Jones has resigned as general manager of the Dominion Iron & Steel Company, Sydney, Nova Scotia, to become manager of the Canada Cement Company.

R. H. Wolff, 445 Broadway, New York, representative of the Heroult electric steel furnace in the United States, has returned from a European trip.

William Bates, for eight years sales manager of the Kirk-Latty Mfg. Company, Cleveland, maker of bolts, nuts, children's vehicles, &c., has accepted a position as manager of the Cleveland office of the Detroit Graphite Company. His office will be in the Cuyahoga Building.

Fred F. Fischer, formerly with the Fischer Foundry & Machine Company, has succeeded George Webb as Pittsburgh representative of the Du Bois Iron Works, Du Bois, Pa., with offices in the Park Building. Mr. Webb has been transferred to New York.

The Bethlehem Steel Company, South Bethlehem, Pa., has appointed W. M. Tobias purchasing agent, succeeding R. S. Van Horn. M. H. Anderson of Milwaukee has been placed in charge of the machine shops and foundries, John M. Herbing continuing to be superintendent of machine shops and William Shennan superintendent of foundries.

The Empire District Electric Company, Joplin, Mo., recently placed with the Westinghouse Electric & Mfg. Company a $350,000 order for 12,000 hp. in turbines with the necessary generating and auxiliary equipment. The company has arranged to furnish power for a number of manufacturing plants and factories in that section.

The Suppression of Dynamiting Outrages.

A combination of Federal, State and city governments to suppress dynamiting outrages was advocated by George B. McMillan, the retiring president of the Cleveland Builders' Exchange, at the annual meeting of the exchange, November 10. He called attention to the fact that during the past two years there had been 13 attempts to destroy work under construction in Cleveland and vicinity. Practically all of these dastardly acts are attributed to the opposition to contractors who conduct their business according to the open shop principle. The latest act of that kind was the wrecking, November 4, of hoisting machinery that is being erected in Cleveland by the Brown Hoisting Machinery Company for Corrigan, McKinney & Co. Mr. McMillan said:

"A serious menace to the construction industry, not only in our own locality, but throughout the entire country, is the dynamiting of work in progress, evidently in the execution of a widespread plot against companies and individuals opposed to certain principles which a lawless element is endeavoring to enforce. So well have these plots been laid that efforts to detect and punish the criminals have only been partially successful.

"I believe that the United States, State and city governments should undertake a systematic plan of ridding the country of those responsible for these crimes. If allowed to proceed unchecked these cases of violence will drive industries from communities in which they exist and discourage new construction to a marked extent. It has been suggested that the construction companies form a league among themselves and thus unite in running down the dynamiters and also provide a mutual insurance fund against losses from this source. I believe that these suggestions are worthy of consideration, but they do not go far enough in combating a crime which is aimed against the commonwealth as well as against the particular individuals and companies directly suffering from these outrages."

Labor Notes.

Effective December 1 there will be an advance of 10 cents a day in the wages of all labor paid by the day at the Dunbar Furnace, the Semet-Solvay Coke Works, the Dunbar Sand Mill and on the New Haven & Dunbar Railroad, all interests of the Dunbar Furnace Company, at Dunbar, Pa., except that the rate for common labor will be $1.50 a day instead of $1.45, as at present. This advance in wages affects about 1000 men.

The Reading Iron Company, Reading, Pa., has posted a notice at its puddling and rolling mills that the puddling rate will be advanced November 22 from $4 to $4.50 a ton, and that all other wages will be restored to practically the basis prevailing before the reduction in the spring of 1909.

The International Association of Machinists is increasing its membership on the Pacific Coast, paying particular attention of late to Portland and Seattle, with a view to an effort to secure the eight-hour day. The receipts of this union in the two years preceding September were about $1,000,000, and in the same time $654,746.50 was paid in strike benefits.

The Bethlehem Steel Company has restored wages at its blast furnaces, steel works and other plants at South Bethlehem, Pa., to the basis prevailing before the reductions made in 1908. The restored rates became effective November 1.

The De Forest Sheet & Tin Plate Company, Niles, Ohio, which is starting up its new sheet mills at that place, has made a satisfactory arrangement with the Amalgamated Association and has signed the scale. The company had objections to some of the conditions exacted by the Amalgamated Association, but these conditions were modified and an amicable settlement was reached. After a lodge of the Amalgamated Association composed of the employees of the De Forest Company had been organized under conditions satisfactory to the men and to the company it decided to sign the scale.

Press reports to the effect that the H. C. Frick Coke Company will announce an advance in the wages of its coke workers during Christmas week, to become effective January 1, cannot be officially confirmed and are at least premature.

The Warwick Iron & Steel Company, Pottstown, Pa., advanced wages 20 cents a day, beginning November 8.

Railroad Equipment Orders.—The Pennsylvania Railroad Company placed orders this week for 10,000 steel freight cars equally divided between the lines East and West. The Pressed Steel Car Company booked 8500 of these cars, the Standard Steel Car Company 1000, and the Ralston Steel Car Company 500. The Seaboard Air Line has ordered 1025 freight cars, the Northern Pacific 600, the Lackawanna 1000 and the Chicago & Northwestern 500, increasing its recent order for ore cars to 1000. The Great Northern has also ordered 1000 ore cars. The Lehigh Valley will place 1000 freight cars early in the new year. Among recent locomotive orders are 50 for the Burlington, 13 for the Lehigh Valley, 50 for the St. Paul, these last being placed with the Brooks plant, Dunkirk, N. Y., and a large order for the Chicago & Alton, which went to the same works. The Chicago & Northwestern is figuring on 100 locomotives and the Carolina, Clinchfield & Ohio on 13. The Pennsylvania Railroad Company has ordered 73 locomotives to be built in its Juniata shops, at Altoona, Pa.

The Standard Roller Bearing Company.—At the recent annual meeting of the Standard Roller Bearing Company, Philadelphia, the following directors were elected for the ensuing year: Lenox Smith, William D. Sloane, Isaac H. Clothier, W. B. Osgood Field, Henry De Forest Baldwin, Edwin Packard, Herbert Du Puy, Edward B. Smith, John C. Winston, George H. B. Martin, James Boyd, R. S. Woodward, Jr. These directors formally elected the following officers: President, Lenox Smith; vice-president, W. B. Osgood Field; vice-president and general manager, R. S. Woodward, Jr.; secretary and treasurer, W. M. Baldwin.

Free Space at Argentine Exposition.—G. H. Sherrill, the American Minister at Buenos Aires, has made a report to the Department of State on the adjustment of a misunderstanding concerning space allotment for exhibitors in the Argentine Exposition next year. Mr. Sherrill had a conference with the Minister of Agriculture and the misunderstanding was cleared up. Free space was allotted for the exhibits of not only American agricultural machinery but also for other classes of machinery.

The Ohio Society of Mechanical, Electrical and Steam Engineers will hold its twentieth meeting November 19 and 20 at Lima, Ohio. The address by President F. W. Ballard, manager of the Engineering and Construction Department of the Sherwin-Williams Company, Cleveland, will be on "Power Costs for Factories." A number of papers on interesting subjects will be presented at the several meetings. A programme of visits to manufacturing plants in the vicinity has been arranged. The secretary of the Society is David Gaehr, Schofield Building, Cleveland.

The Petroleum Iron Works Company has closed its works at Washington, Pa., and removed its main office to Sharon, Pa., where it recently erected a new plant. The company requests that all mail intended for its main office should be sent to Sharon. Branch sales offices are maintained in the Farmers' Bank Building, Pittsburgh, Pa.; 50 Church street, New York; Pierce Building, St. Louis, Mo., and Houston, Texas.

The steamer John P. Morgan, Jr., the second of the big freight boats being built by the American Shipbuilding Company for the Pittsburgh Steamship Company to be completed this season, was launched November 13 at the Lorain yards of the shipbuilding company.

NEWS OF THE WORKS.

Iron and Steel.

The new open hearth furnace No. 6, being built by the Sharon Steel Hoop Company, Sharon, Pa., is expected to be ready for operation about January 1. This company started up last week one of its present open hearth furnaces which had been idle for repairs.

Hannah Furnace of the Republic Iron & Steel Company at Youngstown, Ohio, which has been idle for some time for repairs, went in blast last week.

The Detroit Iron & Steel Company will blow in its No. 1 furnace at Zug Island, River Rouge, about December 1, after relining. The new furnace is expected to be ready in February.

A new stove is being built by the Perry Iron Company, Erie, Pa., in addition to its present complement of three 70 x 21 ft. McClure stoves. It will be of a new type with square checkers. Arthur G. McKee, Cleveland, has the contract.

The new sheet mills of the Deforest Sheet & Tinplate Company, Niles, Ohio, will be in operation November 22, when the last of the six mills will be started up. Four mills were put in operation when the plant was started up a month ago and the fifth mill was started this week. The company will erect a two-story office building, 46 x 68 ft., of brick construction.

The Wilkes Rolling Mill Company, Sharon, Pa., which commenced operations in its puddling department November 1, started up its sheet and tin plate departments last week. During the past several months its plant was closed for making repairs to the machinery, and a new building for the manufacture of tin plate made from puddled iron was completed. Hereafter the company will manufacture but little muck bar for the market, most of its output being used in the manufacture of iron sheets and iron tin plate.

General Machinery.

The W. R. Beatty Machinery & Equipment Company, 30 Carson street, Pittsburgh, is adding machinery and equipment to its plant, and is in the market for the following equipment, used machinery in good condition preferred: One 2½ or 3 in. upsetting and forging machine; 80-lb. Bradley helve hammer; 10,000 or 15,000 lb. steam drop hammer; 120-in. squaring or plate shear for ⅛-in. material; guillotine type sheet bar shear, maximum capacity 12 x 1 in.; horizontal punch, capacity 1-in. through 1 in. plate; power geared punch with capacity of 2½-in. hole through 1½-in. plate or shear 4 in. square from 16 to 20 in. throat; 6-in. pipe threading machine; 20 in. by 10 ft. lathe; 24-in. shaper.

The Atlanta, Birmingham & Atlantic Railroad, Atlanta, Ga., has let contract for the construction of division shops at Manchester, Ga. The equipment for the shops has been purchased.

The Aldrich Pump Department, Allentown, Pa., designing and selling for the Allentown Rolling Mills and the Birdsboro Foundry & Machine Company, has received an order from the Republic Iron & Steel Company for two vertical quintuplex pumps with a capacity of 200 gal. per min. against a pressure of 1000 lb. The pumps will be operated by 150 hp. motors direct connected, and will be utilized in the operation of hydraulic shears and punches. These pumps will be built at the Birdsboro Works.

The Bignall & Keeler Mfg. Company, Edwardsville, Ill., reports that October was the best month of the year in its volume of business. The company states that the demand is getting better steadily, and its stock of machines shows the effect. It expects next year to be a good one.

The Stetson-Ross Machine Works, Seattle, Wash., is increasing its shop facilities and will install some new apparatus, including motors.

Two centrifugal pumps for supplying water under great pressure to an hydraulic plant will be required by the Gold & Sand Mining Company, Oroville, Cal.

Some motors will be purchased this season by the Greensburg Gas & Electric Company, Greensburg, Ind., for industrial plants in the vicinity to take current on commercial day load.

Power and planing mill machinery will be required in the spring for a new plant to be erected at Virginia, Minn., by the Edward Hines Lumber Company.

One or more alternating current motors of 25 to 50 hp. will be installed by the Cincinnati (Ohio) Steel Castings Company.

Some additional machinery will be required before spring by the California Portland Cement Company, Los Angeles, Cal.

A pumping engine or motor driven centrifugal pumps will be bought this winter by Park City, Utah, for the water works recently authorized there.

One or two additional motors will be required before long by the Mason Machine Works, Taunton, Mass.

An additional air compressor may be installed this season at Morgantown, W. Va., by the Elkins Coal & Coke Company.

The Whiting Foundry Equipment Company, Harvey, Ill., has received an order for nine 10-ton electric traveling cranes, each bridge carrying two 5-ton trolleys, from the Illinois Steel Company for its North Works.

The Bury Compressor Company, Erie, Pa., is planning to build a two and three story addition to its plant, which will cost about $50,000.

One or more direct current motors of large capacity will be added to the equipment of the Kilby Locomotive & Machine Works, Anniston, Ala.

A new Corliss air compressor, engine driven, has been decided upon for the American Steel Foundries, Chicago.

At the present rate of increase in business the Gould Coupler Company, Depew, N. Y., will be compelled to enlarge its manufacturing facilities by the purchase of new machinery.

Some additional motors will be required this season by the Sterling Blower & Pipe Mfg. Company, Hartford, Conn.

Foundries.

The Benton Harbor Malleable Foundry Company, Benton Harbor, Mich., has increased its capital stock from $40,000 to $70,000. This increase in capital was made necessary to provide more room and additional machinery in order to fill orders now booked. The company has just completed an addition to its foundry, 65 x 85 ft.; core room, 45 x 65 ft., and a 25 x 100 ft. addition to its annealing room. It has under construction a shipping room, 30 x 60 ft.

The United Boiler, Heater & Foundry Company has been incorporated at Hammond, Ind., with $20,000 capital stock, to do a general foundry business and manufacture power machinery. The directors are Otto Knoezer, C. H. Cass, Walter Williams, J. S. Blackman and W. S. McEwen.

Bridges and Buildings.

A contract has been awarded to the Wm. B. Scaife & Sons Company, Pittsburgh, for several steel frame structures comprising a large addition to the plant of the Allegheny Steel Company at Brackenridge, Pa.

The Youngstown Sheet & Tube Company, Youngstown, Ohio, is making some changes in its sheet galvanizing department to better facilitate the handling of sheets, and is also building a large new warehouse at its nail plant at Struthers, Ohio.

Power Plant Equipment.

Allis-Chalmers-Bullock Company, Montreal, Canada, has received contract from the city of Toronto, Ont., for two two-stage electrically driven centrifugal pumps of 2,500,000 gal. combined capacity, and three screw pumps of 60,000,000 gal. aggregate lift, to be used in connection with a filtration plant about to be constructed.

Some additional electrical apparatus will probably be needed after January 1 by the Atlanta Steel Company, Atlanta, Ga., which has recently experienced an influx of orders at better prices than were previously obtainable, and is likely to find its facilities severely taxed.

At Princeton, Ind., the authorities are planning construction of a pumping plant and the laying of iron mains for water distribution.

A new engine and generator, or possibly steam turbine unit, is likely to be added after January 1 to the plant of the Marblehead Electric Light & Power Company, Marblehead, Mass.

The Davenport Water Power Company, Davenport, Iowa, has prepared plans for a hydro-electric development below LeClaire Rapids. No specifications for machinery appear to have been as yet prepared.

An electric generating unit and motors for operating machinery in the factory will be installed by the Hero Mfg. Company, Philadelphia, Pa.

The Light & Development Company, St. Louis, Mo., contemplates the erection of an electric light plant in the near future.

Machinery will be purchased in the near future for the municipal power station at McKinley, Minn., recently mentioned in this paper. Contract for a boiler has been already let.

Concrete work will be started shortly on a hydro-electric power plant of 2500 kw. capacity, or larger, to be built by the Smith River Electric Company, Crescent City, Cal. Specifications covering the machinery required will not be ready until after January 1.

An electric generating unit for lighting service will probably be required this winter by the city of Lakeland, Fla.

A power plant, equipped with alternating current generator of 750 kw., driven by an impulse turbine wheel, will be built by B. F. Mann at Ft. Spring, W. Va., in order to furnish current for industrial purposes.

The project for a municipal power plant at Lindstrom, Minn., has reached the stage where the purchase of machinery is being considered.

Sidney H. Wheelhouse, Pittsburgh representative of the Hoover-Owens-Rentschler Company, has made sales of a 24 x 40

x 48 in. tandem compound Hamilton Corliss engine for rolling mill work at Buffalo, N. Y., and a Hamilton Corliss engine, to be direct connected to a 600 kw. generator, installed in the power house of the Parkersburg & Marietta Interurban Street Railway Company.

H. J. Koontz, machinery dealer, Century Building, Pittsburgh, has made the following sales: Dunlap-Connellsville Coke Company, for installation at the Simpson mines, near Brownsville, Pa., a 22 x 22½ x 24 in. Ingersoll class A compressor; S. Sherwin, Karns City, Pa., a 24 x 26¼ x 24 in. Ingersoll class A compressor; L. F. Seyberts' Sons, Philadelphia, a 45-kw. Westinghouse generator.

Preparation of plans for pumping stations has been undertaken by order of the authorities at Calumet, Mich.; Kennett, Mo.; Longview, Texas, and Cuero, Texas. Construction of water works is being considered at Huntsville, Mo. Bids for machinery, including triplex, high-lift pump, have been readvertised at Belden, Neb.

An engine, turbine, pump and condensers will be required by the Pauls Valley (Okla.) Ice Company.

The building of a municipal electric plant is under consideration at Hill City, Kan.

Plans for a pumping plant at Wolbach, Neb., have advanced to the point where specifications for machinery will soon be prepared.

Contracts booked by the National Malleable Castings Company, Melrose Park, Ill., are at present so heavy as to necessitate additions to its power equipment.

A new boiler will need to be installed before long in the power house of the Norman (Okla.) Milling & Grain Company.

Plans for a pumping plant for water and sewage system are being prepared at Carpentersville, Ill.

The Durham Traction Company, Durham, N. C., will install additional equipment in its power plant, including a 500-kw. cross compound Corliss engine direct connected to three-phase 60-cycle 2300-volt generator.

An electric generator of about 100 kw. is to be purchased by the Purcell Water Company, Purcell, Okla.

If a bond issue of $50,000 is authorized at the forthcoming special election, a pumping plant and electric power station will be built by Durant, Okla.

A large power station, either generating its own current or taking electrical energy over transmission lines from one of the hydraulic power developments of that section, will be erected in the spring at Rock Hill, S. C., by the Carolina Traction Company, recently organized. The Southern Power Company, which has three large hydro-electric plants, is reported to be back of the project.

Corliss engine, electric generator, switchboard, exciter and transformers will be purchased toward the close of this month by the city of New Castle, Colo.

The electric generating system of the Birmingham Light & Power Company, Birmingham, Ala., will be extended and a new station, with additional machinery, erected either there or at Bessemer.

It is reported from Buffalo, Mo., that a hydro-electric plant, with turbine wheels operating under low head, will be built there by the Big Naungua Power Company.

A power station will be erected by the Los Angeles & Mt. Washington Railway Company, Los Angeles, Cal., work to start after January 1. The choice of a prime mover for the principal generating unit apparently rests between an internal combustion engine and steam turbine.

Electric power and pumping machinery will be purchased this winter by the city of Aylmer, Ont., for a new municipal service station.

Among orders recently received by the Westinghouse Machine Company, East Pittsburgh, is one for two 10,000-hp. turbines with LeBlanc condensers for the new plant of the Empire District Electric Company, which is to furnish power to a number of zinc plants in the Joplin, Mo., district. Other orders for turbines recently received include one turbine, 1000 hp., for the American Iron & Steel Mfg. Company, Lebanon, Pa.; one 1000-hp., Pullman Company, Pullman, Ill.; three for the Pillsbury flour mills, Minneapolis; four for the Nassau Construction Company, Rosslyn, N. Y.; three for Government navy yards at Brooklyn and elsewhere.

The Foos Gas Engine Company, Springfield, Ohio, has received an order for six 150-hp. three-cylinder vertical engines from the Hazel-Atlas Glass Company, Wheeling, W. Va. The glass company is one of the largest manufacturers of certain lines of glassware and the order for additional Foos engines was placed after the company had used eight or ten for some time. The Foos Engine Company is working two shifts to the full extent of its equipment, but it is still unable to keep up with the orders. A large addition to the plant is anticipated.

A new power plant, with engine, generator and electric motors, will be erected by the Thompson Lumber Company, Brent, Ala., in connection with the reconstruction of the mill which recently burned.

At the present rate of increase in the use of electric current additional machinery is likely to be needed in the spring by the Kenmore(N. D.) Light & Power Company.

The authorities at Ellendale, Del., are considering plans for the erection of a power plant to suppy electric current for lighting and pumping.

Active construction work on the Red Oak & Northwestern Railway, Red Oak, Iowa, will begin shortly and the erection of a power plant is being considered.

A pumping engine of 5,000,000 gal. capacity or over will be purchased before long at Kearney, Neb., where extensive plans for a water works system are now nearing completion.

Turbine pumps and a high pressure water system which will serve all ordinary purposes and can also be utilized directly from the hydrants in case of fire is under consideration by the authorities at Texaca, Mexico.

An electric generating unit of 300 hp., with condenser, exciter, boiler plant, pump, heater, transformers, motors, &c., will be required for the new high tension station of the Range Power Company, Chisholm, Minn.

Engine, generator and other power machinery will be purchased this winter by the city of Blackburg, S. C., for a municipal plant recently authorized.

A Corliss engine is to be purchased shortly by the W. C. Collar Lumber Company, Merrill, Wis.

An addition is to be started at once to the plant of the Royal Steam Heater Company, Garden, Mass., and some new machinery purchased in the near future.

A steam turbine of 1000 hp., direct coupled generator, exciter, switchboard, transformers, motors and other machinery, completing the equipment of one of the most modern timber plants on the Pacific Coast, will be installed in the mill of the Union Lumber Company of Tacoma, Wash.

Purchase of a return tubular boiler is to be made this month by the Davis Sears Lumber Company, Pearson, Ga.

Some new machinery will be bought within the coming year by the Power, Transit & Light Company, Bakersfield, Cal., including possibly an internal combustion engine and oil fed gas producer.

An additional or larger generating unit will probably be installed by the Sikeston (Mo.) Ice, Light & Power Company, together with auxiliary apparatus.

An electric generating station is to be built and equipped this winter by the Ipswich (S. D.) Electric Light & Power Company.

An hydraulic power plant of 4000 kw. will be built on the Rio Honde by a company of which Chas. Springer, Cimarron, N. M., is the head. Details of the turbine and electrical equipment have not yet been worked out.

Construction of an electric power plant is under consideration by the authorities at Towner, N. D., and the preparation of plans has been entrusted to a consulting engineer.

An increase in its manufacturing facilities is said to be contemplated by the Hoover-Owens-Rentschler Company, Hamilton, Ohio.

Recent orders of the Allis-Chalmers Company, Milwaukee, Wis., include a triplicate of the heavy duty rolling mill engine, 28 x 48 in., for the shops of the Blue Island Car & Equipment Company, West Pullman, Ill., the machine to be direct coupled to the rolls; Delaware, Lackawanna & Western Railroad, two 500-kw. transformers for Kingsland, N. J.; city of Peabody, Mass., 5,000,000 gal. horizontal compound pumping engine of the crank and flywheel type; city of Thomas, Ga., two 20 x 40 x 42 in. cross compound condensing engines, totaling 1600 hp., each direct coupled to alternating current generator.

Machinery for the municipal power plant will be contracted for next month at Lorain, Ohio.

Plans for the erection of a power plant are under consideration by the directors of the Wahpeton & Breckenridge Street Railway Company, Breckenridge, Minn. A gas engine and producer plant utilizing Dakota lignite coal appear to have preference in the proposed equipment.

Two water tube boilers of 37 hp. each will be bought by the city of Grand Rapids, Mich., for the municipal power and pumping station. A 12,000,000-gal. pumping engine purchased from Allis-Chalmers Company, Milwaukee, is soon to be installed.

The Buffalo & Williamsville Electric Railway Company, Buffalo, N. Y., is in the market for a 200-kw. converter and three 100-kw. transformers.

The blowing equipment of Worth Bros. Company, Coatesville, Pa., which was considerably enlarged about a year ago, will again be increased by the purchase of two engines of the long crosshead vertical type.

A steam turbine power plant will probably be erected next March or April by the Center County Traction Company, Bellefonte, Pa.

The Cambria Steel Company, Johnstown, Pa., has decided upon the installation of a steam turbine of 5000 hp., with alter-

nating current generator, exciter, &c., to furnish current for driving machinery in the mills, where a number of motors are already direct coupled to roll trains.

An engine and electric generator of 175 hp. will be installed by the Johnston Harvester Company, Batavia, N. Y.

A municipal power plant for lighting service is under consideration by the authorities at Rowley, Mass.

Gas engines will probably be selected as prime movers for a new power plant to be built in the late winter or spring by the Kansas City, Olathe, Ottawa & Iola Railway, Kansas City, Mo.

An American firm has sold to Takata & Co., Japan, for shipment to Corea, a cross compound Corliss engine of large size. The American Trading Company, New York, is understood to have negotiated the purchase.

Construction of a new power plant is proposed by the Harvard Electric Company, Harvard, Neb.

If approved by a vote of citizens to be taken at once, Terrell, Texas, will enlarge both the power and lighting plants, installing new machinery.

A large hydraulic power plant, the ultimate capacity to be 7500 kw., will be built about midway between its terminals by the Lawton & Fort Sill Electric Railway Company, Lawton, Okla. Direct current at 1200 volts, with interpole motors connected in series, will probably be adopted as the power standard.

An electric generator and reciprocating engine of 1500 hp. will be required for an extension of the city's power station at Amherst, Ohio, together with condenser, pump, exciter, switchboard, transformer, &c.

The South Platte Power Company, Denver, Colo., has sent out specifications for a hydro-electric plant of large capacity, to be built about 20 miles from Denver at an estimated cost of $1,500,000.

The building of an electric power plant for the borough is under consideration at South River, N. J.

A high speed or Corliss engine will be bought this winter by the Hoquiam Sash & Door Company, Hoquiam, Wash.

A new power plant of considerable capacity, with large boiler equipment, is to be built by the Union Brewing Company, Peoria, Ill.

A new electric power unit of 500 hp. will be required for the Tennessee State Prison.

The erection of a municipal power plant for lighting service is under consideration at Delmont, S. D.

Hardware.

S. L. Allen & Co., Philadelphia, Pa., manufacturers of Planet, Jr., farm and garden tools, are now running a double shift of men night and day in their forging shop, in order to keep up with current orders, nothwithstanding the large concrete addition which was recently built.

Fires.

The foundry of the Harrison Safe Company, Kansas City, Mo., was burned November 11, the loss being about $7000.

The plant of the W. N. Stratzer Iron & Steel Company, Pittsburg, Pa., was burned November 15, the loss being about $80,000.

Miscellaneous.

The Victor Mfg. & Gasket Company, Chicago, incorporated with capital stock of $2500, will manufacture and deal in gaskets, tools, dies, hardware, &c. The incorporators are John H. Victor, Joseph B. Victor and Paul Victor.

The construction of water works has been determined upon at Sugarhouse, Utah.

A refining plant will be built at some point in the Northwest by the Metallic Electric Purification Company, incorporated at Pierre, S. D., for $1,000,000.

A large roasting furnace of the mechanically stirred, superimposed hearth type will be added to the Yampa Smelting Works at Bingham Canyon, Utah, where a battery of such furnaces was installed about three years ago. The contemplated increase in capacity may not, however, be made before spring.

The Automatic Switch Company, Lincoln, Neb., has been incorporated with capital stock of $200,000 to manufacture the Cosey automatic switch, a device which enables a motorman to throw a switch ahead of him by dropping a trip with his foot before reaching it. The officers of the company are J. L. Kennard, president; C. E. Hicks, vice-president; W. V. Matthews, secretary; A. D. Borgelt, treasurer, and H. M. Cosey, superintendent.

The W. F. Norman Sheet Metal Mfg. Company, Nevada, Mo., which on November 3 suffered a loss by fire amounting to between $100,000 and $125,000, announces that work will begin at once upon the erection of new buildings on the site of the burned factory. The new plant will be practically fireproof. The company has established temporary headquarters on the second floor of the H. C. Moore Building.

The Great Southern Automobile Company, Birmingham, Ala., has been organized with a capital stock of $100,000 for the manufacture of high grade automobiles, and will have its plant in operation by January 18, with the expectation of having its cars on the market during the summer of 1910. The officers of the company are E. F. Enslen, president; Ike Adler, vice-president; J. J. Kyser, secretary and treasurer; E. F. Enslen, Jr., general manager.

J. H. Hanley, Eldora, Iowa, advises that as soon as weather opens up the coming spring he will build a garage, 54 x 120 ft., on a lot recently acquired for that purpose.

A pumping engine or turbine pump of large capacity is to be purchased in the near future at Moberly, Mo., an issue of bonds for $150,000 having been voted for the construction of water works.

An important engineering event in the West is the organization, with $300,000 capital, of the Osceola Construction Company, having headquarters at Lincoln, Neb., for the purpose of building, equipping and developing electric railroads.

An extension of the water supply system has been authorized at Brounwood, Texas, which will result before long in the purchase of additional pumping machinery.

Extensive improvements will be made in the near future to the plant of the Lead Mining & Mfg. Company, Bagby, Cal., including the installation of power transmitting machinery, Faber deFaure furnaces and other apparatus.

The Simplex Coupler Company, Chicago, has been organized with a capital stock of $2500 to manufacture and sell motors, engines and metal specialties by N. Wilder, H. A. Mayfield and S. G. Petterson.

The Providence (R. I.) Gas Company is making an innovation in the machinery used for handling gas by installing an electric system for the purpose. The equipment has been ordered through Bartlett, Hayward & Co., engineers, of Baltimore, Md., who will require two electric generators of about 1000 hp. combined capacity, together with heavy Corliss engines for driving them, condensers, pumps and other equipment for the plant. Contract is understood to have been placed with the Allis-Chalmers Company.

The Sharon Boiler Works, Sharon, Pa., builder of Wheeler water tube boilers, tanks, plate work, &c., is now erecting for the Mexican Natural Gas Company, Mexico City, a gas generating plant, composed of piping, tanks and plate work, which will be built by its own organization sent from headquarters. It is also completing a Mullen gas washer for the Stewart Iron Company, Sharon, Pa.

The Stoever Foundry & Mfg. Company, Myerstown, Pa., contemplates building an addition to its shop which will be used for storage purposes. Contract for the building has not yet been placed.

The S. B. Sexton Stove & Mfg. Company, Baltimore, Md., has purchased property adjoining its plant on which an addition will be built some time in the future. Nothing definite has been decided upon as yet regarding the extension of the plant.

The Aluminum Company of America, Pittsburgh, has filed a notice of an increase in its capital stock to $20,000,000. The company now has a capital stock of $3,800,000, of which $600,000 is preferred. It is stated that the new stock will be common stock, and the additional capital represents improvements and large additions to equipment that have been made from time to time by this company to meet the increasing demand for pure aluminum. All the different plants of the company are in operation at present to nearly full capacity, and the demand for aluminum is heavier now than at any time for several years.

In a recent item in these columns it was stated that the fenders manufactured by the Welton Automobile Fender Company, Columbus, Ohio, were intended for street railroad cars. The fenders are manufactured for automobiles.

The Buffalo Co-operative Stove Works, Buffalo, N. Y., has let contract for a two-story brick and steel fireproof addition, 50 x 97 ft., to provide greater facilities for its nickel plating and tinshop departments. A large warehouse is to be built later.

L. E. Minot, Ann Arbor, Mich., has purchased the Robert M. Ball washing machine factory at Muncie, Ind., and will convert it into a furniture factory.

The Star Motor Car Company has been incorporated at Indianapolis, Ind., with $100,000 capital stock, to be increased later to $1,000,000. Plans for factory buildings are being made by George V. Bedell, architect. The officers of the company are: President, Guy G. Shaw; vice-president, J. W. Berauer; secretary, S. J. Summer; treasurer, W. A. Rowland. A five-passenger touring car will be the leading product of the plant.

A pumping station and water supply system will be constructed by the city of Fayetteville, Ark.

Water works, including electrically operated pumps, will probably be built at Harlowton, Mont., within the coming year.

One of the most extensive systems of electrical operation at any ore reduction plant in the country, outside of the large smelters, will be installed this winter by the Gold Spring Mining & Power Company, whose main office is at Salt Lake City, Utah.

The Iron and Metal Trades

Finished Material Heavily Bought.

Prices Advance in Several Lines.

Continued activity in finished material is accompanied by increasing quietness in pig iron. Were it not for buying for steel works the lull in the latter would be pronounced. Consumers of rolled iron and steel are contracting as freely as the mills will let them for their requirements in the first quarter of 1910, and price advances are more numerous as orders accumulate.

Yet there is continued evidence of efforts to hold the market for finished material in check, some concern being expressed at the way in which the advance in Bessemer pig iron tends to lift the whole price structure. Relatively small as is the amount of steel made from purchased Bessemer iron, so much sliding scale business is taken based on the latter that it becomes disproportionately influential.

In connection with the large sales made in recent weeks in bars, shapes and plates for the first quarter of next year, interest has centered in the variations in prices named by different mills. While 1.50c. for bars and 1.60c. for structural material and plates have been commonly reported as established, sales have been made at 1.45c. for bars and 1.55c. for plates and shapes. The higher prices now more generally prevail and premiums are paid for early deliveries.

Car works have taken some further large orders, and one builder of steel cars has 30,000 cars on its books, enough to keep its largest plant busy an entire year. The difficulty of getting material from the mills greatly hinders the delivery of new cars.

On the St. Louis free bridge over the Mississippi the American Bridge Company is low bidder by about $180,000, the contract involving 16,000 tons of steel. Of the Brooklyn Subway work the most important sections have been let and the same company will probably furnish a large part of the 28,000 tons of steel.

Rail purchases for 1910 are estimated to be close to 1,500,000 tons thus far, of which 60 per cent. has been taken by Chicago District mills. Of the Great Northern order for 42,000 tons, recently placed, 15,000 tons will be rolled at Buffalo and the balance in the Chicago District.

The American Tin Plate Company announced advances, effective November 11, of $1 a ton on blue annealed sheets, $2 on black and $3 on galvanized, 10c. a square on painted corrugated roofing sheets and 15c. on galvanized. On tin plates an advance of 10c. a base box was made, or to $3.60. Other mills as a rule are making equal advances. Sheet mills have a larger total of orders ahead than at any time.

Wire mills have done an enormous business since October 1 and one producer is asking $2 a ton advance for nails and some wire products, though the leading interest has made no change as yet. Southern wire production will be greatly increased in the coming year. The large new plant at Alabama City will be started in the spring, and announcement is now made of the building of a 400-ton wire plant in connection with the Ensley Steel Works.

Higher prices for semi-finished steel are named for delivery in 1910 and from $1 to $2 a ton more is asked for second quarter than for first quarter delivery. Sales of sheet bars have been made at $29 and $30 for the first three months.

In all markets foundry iron is quiet, with prices stationary. In Southern iron something is heard of resale lots of No. 2 at $14.50, the decision to charge storage on speculative iron at furnace yards bringing out more of such iron. Sales of 25,000 tons of basic iron were made to an eastern Pennsylvania steel works at $18.60 and $18.50, deliveries beginning in December and extending over the first half.

Lake Bessemer ores for next year have been largely taken up in reservations made without the fixing of prices. Ore dealers are not agreed as to the size of the advance, though 50c. is generally expected. There is much less unanimity on the proposed reduction in metallic iron guarantees, which is another way of making an additional advance.

Though higher prices are asked, the copper metal market is much less excited than the copper share market over the tendency of reported deals. Whether these take the form of community of interest or holding company merger, there is increasing confidence in better conditions for producers. At such a time improvement due to natural causes is apt to be underestimated.

A Comparison of Prices.

Advances Over the Previous Month in Heavy Type. Declines in Italics.

At date, one week, one month and one year previous.

	Nov.17, 1909.	Nov.10, 1909.	Oct.20, 1909.	Nov.18, 1908.
PIG IRON, Per Gross Ton:				
Foundry No. 2, standard, Philadelphia	**$19.00**	$19.00	$18.75	$17.00
Foundry No. 2, Southern, Cincinnati	*17.75*	17.75	18.25	16.25
Foundry No. 2, local, Chicago	19.00	19.00	19.00	17.35
Basic, delivered, eastern Pa.	18.50	19.00	18.50	16.25
Basic, Valley furnace	**17.25**	17.25	17.00	15.50
Bessemer, Pittsburgh	19.90	19.90	19.90	16.90
Gray forge, Pittsburgh	**17.40**	17.15	17.15	15.15
Lake Superior charcoal, Chicago	19.50	19.50	19.50	19.50
BILLETS, &c., Per Gross Ton:				
Bessemer billets, Pittsburgh	27.00	27.00	27.00	25.00
Forging billets, Pittsburgh	**31.00**	31.00	30.00	27.00
Open hearth billets, Philadelphia	**30.60**	30.60	28.60	26.20
Wire rods, Pittsburgh	**33.00**	32.50	32.00	33.00
Steel rails, heavy, at mill	28.00	28.00	28.00	28.00
OLD MATERIAL, Per Gross Ton:				
Steel rails, melting, Chicago	**17.25**	17.25	18.00	15.25
Steel rails, melting, Philadelphia	18.00	18.00	18.00	16.00
Iron rails, Chicago	20.50	20.50	20.50	18.00
Iron rails, Philadelphia	21.00	21.00	21.00	20.50
Car wheels, Chicago	**18.50**	18.50	18.25	15.50
Car wheels, Philadelphia	17.50	17.50	17.50	16.00
Heavy steel scrap, Pittsburgh	*17.50*	17.50	18.00	16.00
Heavy steel scrap, Chicago	*16.00*	16.00	16.50	15.00
Heavy steel scrap, Philadelphia	18.00	18.00	18.00	16.00
FINISHED IRON AND STEEL, Per Pound:	Cents.	Cents.	Cents.	Cents.
Refined iron bars, Philadelphia	**1.65**	1.65	1.60	1.47
Common iron bars, Chicago	1.55	1.55	1.55	1.50
Common iron bars, Pittsburgh	**1.70**	1.65	1.65	1.40
Steel bars, tidewater, New York	1.66	1.66	1.66	1.56
Steel bars, Pittsburgh	1.50	1.50	1.50	1.40
Tank plates, tidewater, New York	**1.71**	1.71	1.66	1.76
Tank plates, Pittsburgh	**1.55**	1.55	1.50	1.60
Beams, tidewater, New York	**1.71**	1.71	1.66	1.76
Beams, Pittsburgh	**1.55**	1.55	1.50	1.60
Angles, tidewater, New York	**1.71**	1.71	1.66	1.76
Angles, Pittsburgh	**1.55**	1.55	1.50	1.60
Skelp, grooved steel, Pittsburgh	**1.55**	1.50	1.45	1.45
Skelp, sheared steel, Pittsburgh	**1.60**	1.60	1.55	1.50
SHEETS, NAILS AND WIRE, Per Pound:	Cents.	Cents.	Cents.	Cents.
Sheets, black, No. 28, Pittsburgh	2.30	2.30	2.30	2.50
Wire nails, Pittsburgh*	1.80	1.80	1.80	1.95
Cut nails, Pittsburgh	1.80	1.80	1.80	1.75
Barb wire, galv., Pittsburgh*	2.10	2.10	2.10	2.40
METALS, Per Pound:	Cents.	Cents.	Cents.	Cents.
Lake copper, New York	**13.25**	13.25	13.00	14.50
Electrolytic copper, New York	**13.00**	13.00	12.75	14.25
Spelter, New York	**6.30**	6.30	6.25	5.05
Spelter, St. Louis	**6.15**	6.15	6.10	4.90
Lead, New York	4.40	4.40	4.40	4.42½
Lead, St. Louis	4.25	4.25	4.25	4.30
Tin, New York	**30.75**	30.50	30.40	30.25
Antimony, Hallett, New York	8.25	8.25	8.25	8.12½
Nickel, New York	45.00	45.00	45.00	45.00
Tin plate, 100 lb., New York	**$3.84**	$3.74	$3.74	$3.89

* These prices are for largest lots to jobbers.

Prices of Finished Iron and Steel F.O B. Pittsburgh.

Freight rates from Pittsburgh in carloads, per 100 lb.: New York, 16c.; Philadelphia, 15c.; Boston, 18c.; Buffalo, 11c.; Cleveland, 10c.; Cincinnati, 15c.; Indianapolis, 17c.; Chicago, 18c.; St. Paul, 32c.; St. Louis, 22½c.; New Orleans, 30c.; Birmingham, Ala., 45c. Rates to the Pacific Coast are 80c. on plates, structural shapes and sheets, No. 11 and heavier; 85c. on sheets, Nos. 12 to 16; 95c. on sheets, No. 16 and lighter; 65c. on wrought pipe and boiler tubes.

Structural Shapes.—I-beams and channels, 3 to 15 in., inclusive, 1.55c., net; I-beams over 15 in., 1.65c., net; H-beams over 8 in., 1.75c.; angles, 3 to 6 in., inclusive, ¼ in. and up, 1.60c., net; angles, over 6 in., 1.65c., net; angles, 3 x 3 in. and up, less than ¼ in., 1.75c., base, half extras, steel bar card; tees, 3 in. and up, 1.65c., net; zees, 3 in. and up, 1.60c., net; angles, channels and tees, under 3 in., 1.50c., base, plus 10c., half extras, steel bar card; deck beams and bulb angles, 1.80c., net; hand rail tees, 2.80c., net; checkered and corrugated plates, 2.80c., net.

Plates.—Tank plates, ¾ in. thick, 6¼ in. up to 100 in. wide, 1.55c. to 1.60c., base. Extras over this price are as follows:

Tank, ship and bridge quality, ¼-in. thick on edges, 100 in. wide, down to but not including 6 in. wide, is taken as base.

Steel plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot, shall be considered ¼-in. plate. Steel plates over 72 in. wide must be ordered ¼-in. thick on edge, or not less than 11 lb. per square foot, to take base price. Steel plates over 72 in. wide, ordered less than 11 lb. per square foot down to the weight of 3-16-in. shall take the place of 3-16-in.

Percentages as to overweight on plates, whether ordered to gauge or weight, to be governed by the Association of American Steel Manufacturers' Standard Specifications.

Gauges under ¼-in. to and including 3-16-in. plates on thin edges	$0.10
Gauges under 3-16-in. to and including No. 8	.15
Gauges under No. 8 to and including No. 9	.25
All sketches (excepting straight taper plates varying not more than 4 in. in width at ends, narrowest end being not less than 30 in.)	.10
Complete circles	.20
Boiler and flange steel plates	.10
"A. B. M. A." and ordinary firebox steel plates	.20
Still bottom steel	.30
Marine steel	.40
Locomotive firebox steel	.50
Shell grade of steel is abandoned.	
For widths over 100 in. up to 110 in	.05
For widths over 110 in. up to 115 in	.10
For widths over 115 in. up to 120 in	.15
For widths over 120 in. up to 125 in	.25
For widths over 125 in. up to 130 in	.50
For widths over 130 in	1.00

TERMS.—Net cash 30 days. Pacific Coast base, 1.30c. f.o.b. Pittsburgh.

Sheets.—Minimum prices for mill shipments on sheet in carload and larger lots, effective from November 11, on which jobbers charge the usual advances for small lots from store, are as follows: Blue annealed sheets, Nos. 3 to 8, 1.70c.; Nos. 9 and 10, 1.75c.; Nos. 11 and 12, 1.80c.; Nos. 13 and 14, 1.85c.; Nos. 15 and 16, 1.95c. Box annealed sheets, Nos. 17 to 21, 2.20c.; Nos. 22 to 24, 2.25c.; Nos. 25 and 26, 2.30c.; No. 27, 2.35c.; No. 28, 2.40c.; No. 29, 2.45c.; No. 30, 2.55c. Galvanized sheets, Nos. 13 and 14, 2.50c.; Nos. 15 and 16, 2.60c.; Nos. 17 to 21, 2.75c.; Nos. 22 to 24, 2.90c.; Nos. 25 and 26, 3.10c.; No. 27, 3.30c.; No. 28, 3.50c.; No. 29, 3.60c.; No. 30, 3.85c. Painted roofing sheets, No. 28, $1.70 per square. Galvanized roofing sheets, No. 28, $3 per square, for 2½-in. corrugations.

Wrought Pipe.—Discounts on steel pipe, ¾ to 6 in., in carloads to the largest trade, are 80 and 5 per cent. off list, and on iron pipe, ¾ to 6 in., are 74 and 5 per cent. off list.

Boiler Tubes.—Regular discounts, effective from October 1, 1909, on steel and charcoal iron boiler tubes, are as follows:

	Steel.	Iron.
1 to 1½ in	49	43
1¾ to 2¼ in	61	43
2½ in	63	48
2¾ to 5 in	69	55
6 to 13 in	61	43

2½ in. and smaller, over 18 ft. long, 10 per cent. net extra.
2¾ in. and larger, over 22 ft. long, 10 per cent. net extra.

Wire Rods.—Bessemer, open hearth and chain rods, $33.

Steel Rivets.—Structural rivets, 2.05c., base; boiler rivets, 2.15c., base, subject to usual extras.

Chicago.

FISCHER BUILDING, November 17, 1909.—(*By Telegraph.*)

The leading interest in this market has endeavored for some time to maintain minimum prices at 1.58c., Chicago, for bars and 1.68c. for plates and structural shapes, but the accumulation of business has grown so rapidly, in excess of the prospective capacity of the mills, that this position has been found untenable and the minimum has been marked up this week $2 per ton, bringing prices into line with what all the other mills in this district have been quoting for some time, namely, 1.68c. to 1.78c. on bars and 1.78c. to 1.88c. on plates and structural shapes. All the mills in this district are sold heavily for deliveries running into next year, and the sales managers are exercising unusual caution in taking on new business. Where they are satisfied that a customer needs a contract through the first half to protect his commitments they have made prices to July 1, but every precaution is taken to guard against speculative purchases. Buyers are getting deliveries according to their needs, possibly at the expense of those who merely want to accumulate stocks in their warehouses, and this policy is proving very successful in taking care of established industries. The occasional buyer, however, has as much difficulty as ever in finding a mill that will take on his orders. The iron bar market has firmed up since the satisfactory railroad purchases that were made two weeks ago, followed by a good volume of new business last week from manufacturing consumers. On very attractive business 1.55c. can still be done, but most of the orders for iron are taken at 1.60c., base. Specifications are very heavy from buyers of rods and wire for manufacturing purposes. The steel mills in this district have been playing havoc with records this fall. The South Works open hearth furnaces made 83,000 tons of ingots in October, an unusual record for the small furnaces in use there. The Bay View bar mills, with only 52 turns in October, rolled 29,540 tons, exceeding all previous records. In other finishing departments the output has been unusually heavy, assisted by the new supply of billets at the rate of about 25,000 tons per month from the Gary billet mill. The flood of old material which has come in to Chicago this fall has about spent its force, but prices are still weak. Coke is very strong, with some difficulty in getting satisfactory deliveries.

Pig Iron.—The pig iron market is going through the severe test of a dull period which has lasted four weeks, without any immediate signs of relief in the way of extensive new buying, and with no disposition on the part of the furnaces to make concessions. The only business reported for last week of any moment was a lot of 3000 tons of Northern basic, purchased by a local open hearth works, and 4000 tons of Virginia basic taken by a steel foundry for St. Louis delivery. Inquiries are light, and the larger buyers of foundry grades show no interest thus far in the question of additional tonnage for the first half. Northern iron continues very strong and the only weakness apparent in Southern grades is confined to lots of resale iron which are offered from time to time without awakening much response on the part of buyers. It is understood here that other Southern furnaces have decided to begin charging storage January 1 on speculative lots held in their yards, following the example of a leading Southern company which, as reported last week, began making this charge November 1. This would indicate that they are confident of the strength of the market. Foundry buyers, however, seem to have covered their requirements for the first quarter and many of them through the first half, and they show little inclination at present to consider any additional tonnage. A difficulty which confronts most of the melters in this district is the shortage of labor, which has become a factor of considerable weight in the situation. If the melters could get more men they would undoubtedly revise their estimates of their needs. It is expected that sharp winter weather will bring into the shops a large number of men now engaged in outdoor work, but no one seems to have any definite idea of the extent to which this will increase manufacturing operations. Meantime, the furnace interests are well satisfied with the business they have done this fall, and most of them are willing to wait until the first of the year before making any special effort to encourage new business. They note with a good deal of satisfaction that their customers are generally taking all the iron on their contracts and believe that very little unfilled tonnage will remain the first of the year, except where the furnaces have been unable to complete deliveries. The following prices are for November and December delivery, f.o.b. Chicago:

Lake Superior charcoal	$19.50 to $20.00
Northern coke foundry, No. 1	19.50 to 20.00
Northern coke foundry, No. 2	19.00 to 19.50
Northern coke foundry, No. 3	18.50 to 19.00
Northern Scotch, No. 1	19.00 to 19.50
Southern coke, No. 1	19.85 to 20.35
Southern coke, No. 2	19.35 to 19.85
Southern coke, No. 3	18.85 to 19.35
Southern coke, No. 4	18.35 to 18.85
Southern coke, No. 1 soft	19.85 to 20.35
Southern coke, No. 2 soft	19.35 to 19.85
Southern gray forge	17.85 to 18.35
Southern mottled	17.60 to 18.10
Malleable Bessemer	19.00 to 19.50
Standard Bessemer	21.40 to 21.90
Jackson Co. and Kentucky silvery, 6%	20.40 to 20.90
Jackson Co. and Kentucky silvery, 8%	21.40 to 21.90
Jackson Co. and Kentucky silvery, 10%	22.40 to 22.90

(*By Mail.*)

Billets.—Although the Gary mill is now rolling billets at the rate of 25,000 tons per month, there has been no relief from the famine in billets which prevails in this district, as the Gary product is all needed in the finishing departments of the leading interest. There is no market quotation on forging billets, which are worth all the way from $30 to $35 per ton for Chicago delivery from Eastern mills.

Rails and Track Supplies.—While negotiations are pending on large prospective orders, no business of any magnitude was closed last week. A heavy tonnage has already been booked by the mills in this district which will carry them far into 1910, so that the lack of new business for a week has no significance. Orders for light rails continue to show improvement and there has been no slackening in the urgent demand for track supplies. We quote standard railroad spikes at 1.80c., base; track bolts and square nuts, 2.30c. to 2.50c., base, all in car lots, Chicago. Light rails, 40 to 45 lb., $26; 30 to 35 lb., $26.75; 16, 20 and 25 lb., $27; 12 lb., $28. Chicago, less 50c. a ton on lots of 500 tons and $1 a ton on lots over 500 tons.

Structural Material.—The demand for plain structural shapes and fabricated work the past week has taken the direction of a large volume of small orders, which amount to a very respectable tonnage. The new business which reaches the mills continues in excess of their capacity, so that they have been going backward steadily in the matter of deliveries. It is expected, however, that the new buying will quiet down in the near future and give the structural mills an opportunity to catch up on deliveries before the heavy buying for next year sets in. The pressure for deliveries has become so urgent that all the mills are now quoting 1.78c., base, as the minimum for Chicago delivery

on the most attractive business. We quote plain material from mill, 1.78c. to 1.88c., Chicago; from store, 2c., Chicago.

Plates.—The one mill which has endeavored to maintain a minimum quotation of 1.68c., base, Chicago, has given up the struggle, under the pressure of continued new buying in excess of capacity, making 1.78c., base, the minimum quoted by all the mills in this district, and this minimum being done only on attractive business. Car orders have been running almost entirely to steel construction this fall, and the builders have had great difficulty in getting material to complete the orders they have in hand. The almost unanimous demand from Western roads for steel cars has found the mills unprepared to furnish the enormous tonnage of plates required for their construction, and this seems to have had the effect of checking the activity of Western roads in placing orders for new equipment. We quote mill prices at 1.78c. to 1.88c., Chicago; store prices, 2c., Chicago.

Sheets.—The general advance in sheets effective November 11 has made no material change in the Chicago market, as many of the mills had anticipated this advance in their quotations to the trade. The new quotations are $1 per ton higher on blue annealed, $2 on box annealed and $3 on galvanized. The mills now show a disposition to accept orders for shipment through the first half of 1910, but the local mill is pursuing a very cautious policy in this as in other lines, to avoid selling beyond its capacity. The advance makes carload prices for mill shipment as follows: No. 10 blue annealed, 1.93c.; No. 28 black, 2.58c.; No. 28 galvanized, 3.68c. Prices from store, Chicago, are: No. 10 blue annealed, 2.25c. to 2.35c.; No. 28 black 2.90c. to 3c.; No. 28 galvanized 4c. to 4.10c.

Bars.—Inability to keep pace with specifications and new business has brought all the mills in this district up to the minimum of 1.68c. for soft steel bars, in line with the minimum for Pittsburgh, with freight added. Buyers have great difficulty in placing any new business unless it is something that works in readily with specifications now in hand. The mills require a great deal of persuasion to take any new contracts for specifications through the first half of 1910, but more or less business of this character has been done where established buyers show that they need contracts to protect themselves. The policy which the mills are endeavoring to carry out in this district is to guard their available capacity against the inroads of speculative purchases which might hamper their ability to take care of their regular customers. There is quite a volume of new business in iron bars, and this branch of the business is very strong, with the minimum 1.55c. on tonnage of the most attractive character and most of the orders going at 1.60c. Very few contracts have been accepted running through the first half, except the railroad contracts reported last week.

Merchant Pipe.—The policy of requiring specifications with orders and limiting new business to 30 days requirements of the buyer has enabled the merchant pipe interests to avoid the condition of congestion which prevails in other branches of the trade. The current volume of business is very satisfactory at the established level of prices.

Boiler Tubes.—There is no feature of interest in this branch of the market, except that the demand is improving steadily and the accumulated stocks of jobbers are going into consumptive use.

Cast Iron Pipe.—The lowest bid on the water pipe for Kansas City, Kan., 1000 tons, was offered by a Birmingham maker, and it is understood here that the contract went there. No other municipal lettings of moment are reported for the past week. St. Paul, Minn., is in the market for 2500 tons of water pipe, and other municipalities are considering their requirements. The demand for gas pipe has been quiet, but the market for all grades of cast iron pipe is firm. We quote per net ton, Chicago, as follows: Water pipe, 4-in., $28.50; 6 to 12 in., $27.50; 16-in. and up, $26.50, with $1 extra for gas pipe.

Metals.—Jobbing interests report a very satisfactory volume of business for the past week with practically no change in prices except that tin in carloads is ¼c. higher in this market. Consumers of lead have taken advantage of the recession in prices last week by booking liberal orders. Spelter is holding steady at the prices heretofore quoted. We quote as follows: Casting copper, 13c.; lake, 13⅜c., in carloads, for prompt shipment; small lots, ¼c. to ⅜c. higher; pig tin, car lots, 31¾c.; small lots, 33c.; lead, desilverized, 4.40c. to 4.50c. for 50-ton lots; corroding, 4.65c. to 4.75c., for 50-ton lots; in carloads, 2½c. per 100 lb. higher; spelter, 6.30c. to 6.40c.; Cookson's antimony, 10⅜c., and other grades, 9¾c. to 10¼c.; sheet zinc is $8, f.o.b. La Salle, in car lots of 600-lb. casks. On old metals we quote: Copper wire, crucible shapes, 13¼c.; copper bottoms, 11½c.; copper clips, 12¼c.; red brass, 12c.; yellow brass, 9¼c.; light brass, 6¾c.; lead pipe, 4½c.; zinc, 5.25c.; pewter, No. 1, 23c.; tin foil, 25c.; block tin pipe, 27c.

Old Material.—The heavy fall movement in scrap has about spent its force in the market but has resulted in more or less of a realignment of values. A strong buying syndicate takes care of the steel scrap that comes in sight, but the movement of wrought grades has exceeded the ability of consumers to absorb it, and many distress sales are noted at prices below the market. Rerolling rails continue strong. The market on the whole has shown great vitality in digesting the largest movement of old material that has ever been known here. Consumers, however, have filled their yards to the limit and are likely to restrict their purchases, in wrought scrap at least, to the quantity necessary to cover their new business. Special grades, like locomotive tires and other substitutes for billets, are scarce and in very active demand. Car wheels are steady. The following prices are per gross ton, f.o.b. Chicago:

Old iron rails	$21.00 to $21.50
Old steel rails, rerolling	18.00 to 18.50
Old steel rails, less than 3 ft	17.25 to 17.75
Relaying rails, standard sections, subject to inspection	23.50 to 24.50
Old car wheels	18.50 to 19.00
Heavy melting steel scrap	16.00 to 16.50
Frogs, switches and guards, cut apart	16.00 to 16.50
Shoveling steel	15.50 to 16.00

The following quotations are per net ton:

Iron angles and splice bars	$18.00 to $18.50
Iron car axles	21.50 to 22.00
Steel car axles	20.50 to 21.00
No. 1 railroad wrought	15.25 to 15.75
No. 2 railroad wrought	14.25 to 14.75
Springs, knuckles and couplers	15.25 to 15.75
Locomotive tires, smooth	18.25 to 18.75
No. 1 dealers' forge	13.25 to 13.75
Steel axle turnings	11.75 to 12.25
Machine shop turnings	11.00 to 11.50
Cast and mixed borings	7.50 to 8.00
No. 1 busheling	13.25 to 13.75
No. 2 busheling	10.25 to 10.75
No. 1 boilers, cut to sheets and rings	11.50 to 12.00
No. 1 cast scrap	15.25 to 15.75
Stove plate and light cast scrap	13.00 to 13.50
Railroad malleable	15.25 to 15.75
Agricultural malleable	13.50 to 14.00
Pipes and flues	12.00 to 12.50

St. Louis.

ST. LOUIS, November 15, 1909.

The railroads centering at St. Louis report an unusually heavy traffic and have called into service all their available rolling stock. Congestion is not likely to be severe at this city, owing to large additions to yard trackage which admits of handling cars rapidly and thus releasing them more promptly than during the previous car famine. Bank clearings thus far this month are conspicuously heavy. For the past week, the total was $80,782,384. The gain over the corresponding time last year is large.

Coke.—Increased attention is being given to requirements for coke and the market is more active than for some months. Inquiries are coming from both large and small consumers. Among the important inquiries pending is one for 30,000 tons furnace coke for a local company and 10,000 tons of foundry coke, both for shipment over the first half of 1910. A leading house states that the demand this month thus far exceeds that of any other during the present year; some of the inquiries are for lots of 40 to 50 cars. Brokers whose trade lies in St. Louis territory and whose customers buy in small lots, state that business is very good. As would naturally be expected, the market is firm and tending upward. The difficulty respecting shipments on account of car shortage is growing more pronounced. We quote for standard 72-hour foundry, for shipment prior to January 1, $3.25, and for shipment over the first half of 1910, $3.50 per net ton, f.o.b. oven, Connellsville.

Pig Iron.—Houses whose business comes principally from large buyers report the demand quiet. Notwithstanding this is the case, a confident feeling prevails and it is believed that railroad buying will increase in the near future, thus causing renewed purchase from melters. Large consumers are reported to have expressed themselves as looking for higher prices for pig iron after the turn of the year, and while none of these parties is in the market at present, they all state that they expect to find it necessary to make contracts after the holidays. A sale of 800 tons of Southern foundry is reported, and also one of 400 tons. Some of the brokers are having a fair business in small lots of Southern foundry for prompt shipment, coming from a wide range of territory, the largest inquiry being for 400 tons. Resale iron is still being offered in this market, but as it is being bought by brokers, it does not affect the trade with consumers, especially as the lots are small. Prices with furnaces are strong, and this is seen both in correspondence and through visits to producing districts; a representative of a leading house having just returned from Birmingham, states that the ideas of producers for 1910 iron are bullish and in no instance was an intimation made of concessions in prices on contract, or any disposition to name figures beyond the first half. Specifications on contracts are coming in freely and urgent requests made for quick shipment. The fear of serious delay in transportation is now general, and is causing consumers to give attention to providing for their prospective requirements. We quote Southern No. 2 foun-

dry at $15, f.o.b. Birmingham, for any shipment up to July 1, 1910, with an occasional premium paid for spot iron.

Lead, Spelter, Etc.—Lead is firm at 4.25c., East St. Louis, with a fair demand. Spelter is strong at 6.25c. and active. Zinc ore is in good demand at $51 to $52 per ton, Joplin base. Tin is off 20c. per 100 lb.; antimony and copper are unchanged. The demand for finished metals is rather better than the average.

Old Material.—Leading dealers admit that conditions are not improved, so far as the demand is concerned, but claim that, notwithstanding, the market is quiet, prices are in the main being sustained. The firm situation in the pig iron market is helpful, and renewed buying on the part of consumers is expected ere the month closes. Relaying rails are very scarce and wanted, with practically no offerings on the part of the railroads. Only one list is reported for the week—a small one of about 125 tons by the Vandalia Line. There is no demand from Eastern markets. We quote dealers' prices as follows, per gross ton, f.o.b. St. Louis:

Old iron rails	$18.00 to $18.50
Old steel rails, rerolling	16.50 to 17.00
Old steel rails, less than 3 ft	16.00 to 16.50
Relaying rails, standard sections, subject to inspection	25.00 to 25.50
Old car wheels	18.50 to 19.00
Heavy melting steel scrap	16.00 to 16.50
Frogs, switches and guards, cut apart	16.00 to 16.50

The following quotations are per net ton:

Iron fish plates	$15.00 to $15.50
Iron car axles	21.00 to 21.50
Steel car axles	21.50 to 22.00
No. 1 railroad wrought	15.50 to 16.00
No. 2 railroad wrought	14.50 to 15.00
Railway springs	14.00 to 14.50
Locomotive tires, smooth	16.50 to 17.50
No. 1 dealers' forge	11.50 to 12.00
Mixed borings	7.50 to 8.00
No. 1 boilers, cut to sheets and rings	11.00 to 11.50
No. 1 cast scrap	14.50 to 15.00
Stove plate and light cast scrap	10.75 to 11.25
Railroad malleable	13.50 to 14.00
Agricultural malleable	12.00 to 12.50
Pipes and flues	11.75 to 12.25
Railroad sheet and tank scrap	10.50 to 11.00
Railroad grate bars	11.50 to 12.00
Machine shop turnings	10.50 to 11.00
No. 1 busheling	12.50 to 13.00

Matthew Addy & Co. have been appointed selling agents for the Southern Iron & Steel Company in the St. Louis territory and will handle the output of the Trussville and Chattanooga furnaces.

The president of the Illinois Central Railroad gives out that practically all of the company's 60,000 freight cars are now in active service.

Bids are now asked by the Board of Public Improvements for the interior finishing of the Municipal Courts Building, to be opened December 3. The interior contract will include heating apparatus, lighting fixtures, plumbing, &c., and the estimate is $246,000.

It is understood that the Missouri Pacific Railroad in September earned at the rate of 10 per cent. on the stock. Improvements of considerable size are contemplated.

An application for articles of incorporation revealed the fact that the Webb Motor Fire Apparatus Company will remove its plant from Vincennes, Ind., to St. Louis. The new company is styled the Webb Motor Fire Apparatus Company of St. Louis. The capital stock is $300,000, one-half paid up.

The Scullin-Gallagher Iron & Steel Company has recently purchased over 30,000 tons of pig iron and is enjoying a good demand for steel castings from various railroads.

Philadelphia.

PHILADELPHIA, PA., November 16, 1909.

The pig iron market continues dull, particularly in the foundry grades, although prices are unchanged and the undertone is decidedly strong. Some little movement in steel-making irons is noted, a round tonnage of basic having been sold at prices under those recently quoted. Finished materials show increased strength, makers of practically all classes having more business offered for near future delivery than they can take care of, and the tendency to put aside inquiries for extended delivery is again more pronounced. Ruling quotations are subject to immediate acceptance and prompt specifications in nearly every instance, and it looks as if prices would advance, particularly if the strong demand continues. Billets are very firm, while sheets have been advanced $2 a ton, with sharp premium being paid for prompt shipment. Old material is dull, and the market in it presents a waiting appearance.

Pig Iron.—The foundry iron movement in this territory has been light, and from present indications it appears as if a rather inactive market would prevail for a time. Consumers are pretty well covered for near future requirements, but are taking deliveries freely, and in some cases stocks are being accumulated in view of possible delays in delivering during the winter months. Sales have been quite closely confined to lots ranging from carloads to a few hundred tons for delivery during the next three or four months. Prices are quite strong, although some makers are willing to extend deliveries somewhat at the ruling quotations. Standard brands of No. 2X foundry are firm at $19 to $19.50, delivered in this vicinity, sellers maintaining a strong front, as for the most part they are well sold up and have practically no stocks on the furnace banks. A less active demand for low grade foundry iron is reported. Virginia foundry irons are selling more freely for first quarter shipment. Prices also are on a more even basis; those sellers who have recently had high ideas regarding prices have receded to some extent from their position and $16 to $16.25, furnace, now represents about the average asking prices for No. 2X Virginia foundry for prompt or first quarter delivery, and a number of sales for early 1910 delivery, ranging from 100 to 300 tons, have been made at $19.25, delivered in this vicinity. Inactivity in Southern foundry grades continues. At the $15, Birmingham, basis for No. 2X, the delivered price in this vicinity is too high to be of any interest when compared with quotations for Northern irons. Resale iron can be had about 50c. under this price, but even at that quotations are hardly low enough to interest buyers in this district. There is still a fair demand for forge iron, mills inquiring for delivery over the first half of the year. The most important transaction was a sale of 4500 tons for puddling purposes, shipment over the first half, at $18.15, delivered, to an Eastern mill. Sales of smaller lots for less extended delivery are also reported at $17.75 to $18, delivered. Basic iron, which has recently been rather inactive, shows some movement, but at a lower price than was done a few weeks ago. One Eastern consumer has taken two lots, one of 15,000 and the other 10,000 tons, for shipment over the first half of next year, at $18.60 and $18.50, delivered, respectively. No further sales have been made, and it is rather doubtful that additional tonnage could be had at the lower figure. The majority of basic sellers in this territory still firmly maintain $19, delivered, as their price for that grade, for shipment over the first half. Some further inquiry is reported, several consumers not being fully covered for the first and second quarters, but they are disposed to hold out, at least, for the lower quotations. Low phosphorus iron is still in comparatively good demand, although sales during the week have not been heavy. Quotations are firm at $22.75 to $23 for domestic brands, delivered in this territory, although foreign low phosphorus iron is offered at a shade less. While foreign foundry pig iron is still being freely offered by merchants, consumers do not appear anxious to purchase at the present price levels, which are not sufficiently low, as compared with those for domestic brands, to be attractive. For delivery in buyers' yards, eastern Pennsylvania and nearby points, for the remainder of the year and first quarter of 1910, the following range of prices is quoted for standard brands:

Eastern Pennsylvania, No. 2 X foundry	$19.00 to $19.50
Eastern Pennsylvania, No. 2 plain	18.50 to 19.00
Virginia, No. 2 X foundry	19.00 to 19.25
Virginia, No. 2 plain	18.50 to 19.00
Gray forge	17.75 to 18.25
Basic	18.50 to 19.00
Low phosphorus	22.75 to 23.00

Ferromanganese.—Actual transactions have been rather light, although there has been a little more inquiry, one consumer asking for 500 tons and another for 300 tons, both for next year's delivery. The market shows practically no change, quotations for shipments for the first half of 1910 ranging from $44.50 to $45, Baltimore, with small lots commanding a somewhat higher figure.

Billets.—Makers in this territory are practically sold up as far as deliveries for the remainder of this year are concerned, although moderate lots of ordinary rolling billets for shipment in the first quarter are taken at $30.60, delivered in this vicinity. For delivery beyond the first quarter mills have not yet opened their books. Delays in delivery are noted, as shipments are being urged by nearly all buyers. Forging billets are active, commanding from $32 to $34, Eastern mill, dependent on conditions. The usual extras apply for high carbons and special sizes.

Plates.—Business is coming to the mills faster than it can be taken care of. Plate makers are not soliciting orders, as they are now unable, in many instances, to make good deliveries, and show an increasing tendency to refuse to consider orders for extended delivery. Large inquiries from the West are noted, but mills have about as much as they can do to take care of their regular trade, and quotations made are for the most part subject to immediate acceptance, and specifications must accompany the order. Locomotive, tank and structural plates have made up the bulk of the business during the week. Prices are firm, 1.75c. to 1.80c. being quoted for ordinary plates delivered in this vicinity.

Structural Material.—A falling off in orders for large lots is noted, although there are some fairly good sized deals under consideration, one, requiring 1400 tons, being under negotiation for a building in this city. The bulk of the orders placed during the week have been for small and moderate

tonnages. Mills are fully engaged and are still unable to gain on delayed shipments. The Eastern Steel Company, Pottsville, Pa., which has been operating at top capacity, has decided to enlarge its plant by the addition of two 80-ton open hearth furnaces, which will become active early in the spring. Prices are firm, 1.75c. to 1.80c. being quoted for plain shapes, dependent on specifications and delivery.

Sheets.—Eastern producers have advanced prices of sheets $2 a ton, and still obtain premiums ranging from $2 to $4 a ton for prompt shipments. The demand continues heavy, considerable business being offered by consumers in the West, but Eastern mills have about as much as they can do to take care of their own trade. Fairly good sized orders are being booked for deliveries ranging up to the year's end. Mills are operating at top capacity. The following range of prices is quoted for reasonably early deliveries in this vicinity: Nos. 18 to 20, 2.60c.; Nos. 22 to 24, 2.70c.; Nos. 25 and 26, 2.80c.; No. 27, 2.90c.; No. 28, 3c.

Bars.—The demand for bars continues quite active. Steel bars, except in the larger sizes, cannot be had for reasonably early delivery, and consumers have been placing orders for their requirements with iron bar makers. Refined iron bars can still be had for early delivery, although makers are not inclined to take business on which extended deliveries are to be made. Leading producers quote 1.65c. to 1.75c. for refined iron bars, delivered in this territory, although small mills will probably shade those figures. Steel bars are firm, at 1.65c., delivered, but shipments are largely delayed.

Coke.—While there have been no heavy sales in this territory, prices for early 1910 delivery are somewhat higher, particularly for standard foundry grades. Prompt coke appears to be somewhat scarce. For delivery either during the remainder of this or first quarter of next year standard foundry coke is quoted at $3.10 to $3.25 per net ton, at oven, with a few sellers naming as high as $3.50. Furnace coke is strong at $2.85 to $3, at oven. For delivery in this territory, shipment during the next five months, the following quotations about represent the market:

Connellsville furnace coke	$5.35 to $5.50
Foundry coke	5.10 to 5.25
Mountain furnace coke	4.95 to 5.10
Foundry coke	4.70 to 4.95

Old Material.—The market is quiet. Very little movement is to be noted in any grade, a waiting tendency prevailing both on the part of the buyer and seller. Heavy melting steel is comparatively firm at $18 to $18.25, the lower figure being the associated mills' price, at which they claim to be getting tonnage freely. The railroads have not yet announced awards against the monthly lists, which are understood to have been somewhat heavier than usual. The market on the whole shows a trifle more strength, although, owing to the absence of business, quotations are to some extent nominal, ranging about as follows for prompt delivery in buyers' yards, eastern Pennsylvania and nearby points:

No. 1 steel scrap and crops	$18.00 to $18.25
Old steel rails, rerolling	19.25 to 19.75
Low phosphorus	23.00 to 23.50
Old steel axles	24.00 to 25.00
Old iron axles	30.00 to 31.00
Old iron rails	21.00 to 22.00
Old car wheels	17.50 to 18.00
Choice No. 1 R. R. wrought	21.00 to 21.50
Machinery cast	17.50 to 18.00
Railroad malleable	17.50 to 18.00
Wrought iron pipe	17.25 to 17.75
No. 1 forge fire scrap	16.50 to 17.00
No. 2 light iron	10.75 to 11.25
Wrought turnings	15.25 to 15.75
Stove plate	14.00 to 15.00
Cast borings	13.25 to 13.75
Grate bars	14.50 to 15.00

The Girard Iron & Metal Company, East York street and Aramingo avenue, Philadelphia, scrap iron, steel and metal merchant, has opened a downtown office at 1001 Real Estate Trust Building, in that city, in charge of Samuel Ginsberg.

Pittsburgh.

PARK BUILDING, November 17, 1909.—(*By Telegraph.*)

Pig Iron.—The market in the past week has been quiet. No further large sales of Bessemer have been made. The leading steel makers that have had to buy Bessemer and basic in the open market now seem to be pretty well filled up, and not much heavy buying of pig iron is expected for the balance of this year. There has been some little buying of low phosphorus iron, several fair sized lots having been sold on the basis of about $22.75, Pittsburgh. A local consumer is in the market for a fairly large lot of high phosphorus and high silicon iron, and the business is expected to be closed this week. One of the Mahoning Valley furnaces has been a persistent seller of foundry iron at somewhat lower prices than other makers are willing to accept. We quote Bessemer iron at $19 for delivery over the remainder of this year and through the first half of next year; basic, $17.25 for this year and $17.50 for first quarter; malleable Bessemer, $17.50; No. 2 foundry, $17.25 to $17.50, and gray forge $16.50, all at Valley furnace, the freight rate to the Pittsburgh District being 90c. a ton.

Steel.—No price has yet been fixed by any of the steel producers on sheet and tin bars for first quarter of next year delivery, but indications are that the price will not be less than $30. Inquiries for small lots of billets ranging from 300 to 500 tons are more numerous, showing that deliveries on contracts by the mills are getting worse instead of better. There are no regular prices on steel, these depending altogether on the necessities of the buyer and whether the mills have the steel to spare. Bessemer billets in small lots for spot shipment have sold at $27 and higher, and sales of open hearth billets for prompt delivery are reported at above $28. Several small lots of sheet and tin bars for November and December delivery have sold at prices considerably higher than consumers are paying on their regular contracts.

Ferromanganese.—A leading local consumer is in the market for 500 tons of ferromanganese for second quarter of next year delivery, and one quotation of $46, seaboard, has been made on this inquiry.

(*By Mail.*)

Reports that the Carnegie Steel Company had fixed a price of $30, Pittsburgh, on sheet and tin bars, for delivery in first quarter of 1910, are absolutely untrue. It has not as yet fixed any price on these products for next year and probably will not do so. The company's policy will be that if it has any bars to spare it will name a price at the time it makes the contract. It can be stated, however, that the company would not accept less than $30 for sheet and tin bars for first quarter, and it has sold small tonnages for prompt shipment at only a shade under that price. The starting up of the Bessemer plant at the Homestead Works of this company, which has been idle for several years, emphasizes the shortage existing in steel; it is being started up to increase the steel supply of the Homestead Works, to be used in rolling shapes and plates. The wonderful activity existing in the steel trade shows no letting down whatever; and so little material is available for prompt shipment, and always brings premiums in prices, that it is difficult to accurately quote the market on some lines of finished material, as well as on steel. Prompt Bessemer billets have sold at $27 and higher; open hearth billets, $28 to $28.50, and forging billets at $30.50 and $31, at maker's mill. There have been no important transactions in pig iron in the past week, the new demand being quiet, but prices are firm. On Thursday, November 11, the American Sheet & Tin Plate Company announced an advance or $1 per ton on blue annealed sheets, $2 on black, $3 on galvanized and 10c. per base box on tin plate. Prices of shafting have also been advanced two points and the market is very strong. The expected advances in prices on steel pipe and wire products have not yet been made, but one leading wire interest has taken the initiative and is asking $2 a ton advance on wire nails and wire products, and is closely adhering to the higher price in its quotation to the trade. There has been an advance of about 5c. per keg in spikes for next year. Reports that the Jones & Laughlin Steel Company was sold up on all its products through the first half of 1910 are greatly exaggerated. This company has very little material to spare of any kind for this and the first quarter of next year, and while declining to take on new customers is taking care of its old ones and giving them material as fast as it can be shipped. It is also entering contracts on its various products for shipment through the first quarter of next year, and in a few cases the first half, on certain lines. The coke and scrap trades are still somewhat quiet in new demand, but prices on both materials remain strong.

Ferromanganese.—While no large sales were made the past week, there is a fair amount of new inquiry and prices are strong. We quote 80 per cent. foreign at $44.50 to $45, seaboard, for this year, while for first half of next year $45 to $46 is asked.

Ferrosilicon.—Sales of 250 to 300 tons of 50 per cent. for delivery over the next three or four months are reported at about $64.50, Pittsburgh. Prices are firm and are expected to be higher in the near future. We quote 10 per cent. at $23.90; 11 per cent., $24.90; 12 per cent., $25.90, and 50 per cent., $64.50, Pittsburgh.

Muck Bar.—A sale of 1000 tons of high grade muck bar, made from all pig iron, has been made at $30, Pittsburgh. The market is firm, and we quote best grades at this price.

Wire Rods.—The available supply of rods is limited, and premiums are being asked for prompt shipment. One leading maker of open hearth rods is quoting $34, Pittsburgh, and while it has made no sales at that price, is indifferent about selling at a lower figure. We have advanced prices and now quote Bessemer, open hearth and chain rods at $33 to $34, Pittsburgh.

Skelp.—There is an active demand for steel and iron

skelp in sheared sizes, and prices are very firm. One leading mill that has been an active seller for some time is now filled up for several months ahead and is out of the market. We quote: Grooved steel skelp, 1.55c.; wide skelp in sheared sizes, 1.60c.; grooved iron skelp, 1.75c. to 1.85c., and sheared sizes of wide iron skelp at 1.90c. to 1.95c., f.o.b., at mill, Pittsburgh.

Steel Rails.—The Carnegie Steel Company has finally received its contract from the Pennsylvania Railroad for 27,100 tons of rails to be delivered next year, and which will be rolled at the Edgar Thomson mills. It is known positively that three or four leading roads have made up their schedule of rails needed for next year, but the actual contracts have not yet been placed. Last week the Carnegie Steel Company received orders and specifications for about 2400 tons of light rails. We quote steel axles at 1.75c. to 1.80c., and splice bars, 1.50c., at mill, Pittsburgh. Light rail prices are as follows: 8 to 10 lb., $32; 12 to 14 lb., $29; 16, 20 and 25 lb., $28; 30 and 35 lb., $27.75, and 40 and 45 lb., $27, Pittsburgh. These prices are for 250-ton lots and over, and for small lots premiums of 50c. per ton and more are being paid. We quote standard sections at $28, at mill.

Plates.—This week the Pressed Steel Car Company received an order from the Pennsylvania Railroad for 4500 steel cars and another order from the New York Central for 1500 steel cars, the plates and shapes to be furnished by the Carnegie Steel Company. The Pressed Steel Car Company now has orders on its books for nearly 30,000 cars, which represents nearly a year's work at its McKees Rocks plant, which, when running to full capacity, as it is now, can turn out close to 100 steel cars per day. The company is getting its Woods Run plant ready for operation as fast as possible, and this works can make about 40 steel cars per day. It is having trouble in getting prompt deliveries on plates and shapes and very often runs short of material on account of delayed shipments. Prices on plates are strong and the leading mills are now quoting 1.55c., Pittsburgh, on ¼-in. and heavier plates, for reasonably prompt shipment, and some tonnage has been sold at 1.60c., at mill.

Structural Material.—Reports that the McClintic-Marshall Construction Company would build an open hearth steel plant in connection with its new bridge shops to be built at Indiana Harbor, Ind., are not officially confirmed. The American Bridge Company has taken about 2000 tons of bridge work for a Western road, and the Riter-Conley Mfg. Company and Wm. B. Scaife & Sons Company have taken some small steel buildings, amounting all told to about 1000 tons. Deliveries of plain material by the mills are still unsatisfactory. The fabricating plant of W. M. Kratzer & Co. in this city was almost totally destroyed by fire Monday night. Prices continue strong and we quote beams and channels for reasonably prompt shipment at 1.55c. and small lots have sold as high as 1.60c. at mill.

Sheets.—Effective Thursday, November 11, the American Sheet & Tin Plate Company and the independent mills announced an advance of $1 a ton on blue annealed sheets, $2 a ton on box annealed black, $3 a ton on galvanized, 10c. per square on painted corrugated roofing sheets, and 15c. on galvanized. The sheet mills are filled up with orders as they never were before, some having the greater part of their entire output sold up for the balance of this year and in some cases through the first quarter of next year. Other mills have refrained from making engagements on sheets for first quarter on account of the uncertainty about the price of sheet bars, and are in position to take contracts at the higher prices for first quarter delivery. Indications are that prices of sheet and tin bars for first quarter will be as high as $30 at maker's mill, but no official announcement has been made by the Carnegie Steel Company or any other concern rolling bars as to what its prices will be for first quarter. The advance of $3 a ton on galvanized sheets and roofing will partly make up for the steady sharp advances in the last month on spelter. Prices on sheets effective from November 11 are as follows: Blue annealed sheets, Nos. 3 to 8, 1.70c.; Nos. 9 and 10, 1.75c.; Nos. 11 and 12, 1.80c.; Nos. 13 and 14, 1.85c., and Nos. 14 and 15, 1.95c. One-pass box annealed No. 28 black sheets, 2.40c., and No. 28 galvanized, 3.50c., at mill. We quote corrugated roofing sheets at $1.70 per square for painted and $3 for galvanized, 2½-in. corrugations. Jobbers charge the usual advances over these prices for small lots from store.

Tin Plate.—Effective Thursday, November 11, the American Sheet & Tin Plate Company announced an advance of 10c. per base box on tin plate, or from $3.50 to $3.60. This interest and the independent works are filled up with orders for several months ahead, and it is stated that some contracts for tin plate for first quarter delivery have already been made at the new price of $3.60 per base box. We now quote 100-lb. cokes at $3.60 per base box, f.o.b. Pittsburgh, for delivery through first quarter of next year.

Bars.—New orders for both iron and steel bars are not as heavy as they have been, but specifications against contracts are piling into the mills at an enormous rate, and most of the leading iron and steel bar mills have a good part of their output under engagement through the first quarter of next year. The Jones & Laughlin Steel Company has just finished the building of a new steel bar mill at its plant on the South Side, known as No. 17 mill, and on which it will roll intermediate sizes of steel bars. Deliveries in iron bars are almost as far back as in steel bars. We quote steel bars at 1.50c. to 1.55c., at mill, for reasonably prompt shipment, but on contracts for delivery ahead two leading makers continue to quote about 1.45c., at mill. Prices on iron bars are higher, and we quote at 1.70c. to 1.75c., Pittsburgh, for prompt shipment.

Hoops and Bands.—Specifications against contracts placed some time ago are coming in freely, and a fair amount of new business is being placed, but new orders are not quite as active as they were. We quote steel hoops for forward delivery at 1.50c. to 1.55c. and for prompt shipment at 1.60c. to 1.65c., at mill. Steel bands are firm, at 1.45c. to 1.50c., on contracts for forward delivery, and 1.55c. to 1.60c. for reasonably prompt shipment.

Spelter.—Prices on this material have remained stationary in the past week, and we continue to quote prime grades of Western at 6.10c. to 6.15c., East St. Louis, the freight to Pittsburgh being 12½c. per 100 lb. A local consumer has bought 50 tons at 6.10c., East St. Louis.

Spikes.—The New York Central has placed an order with a local maker for 10,000 kegs of spikes for delivery into first quarter of next year, and the Erie is in the market for 20,000 kegs. The Big Four, Michigan Central and Lake Shore also have heavy inquiries out for spikes for next year. We quote standard sizes of railroad spikes, 4½ x 9-16 in. and larger, at $1.75 for prompt shipment and $1.80 for first quarter. Boat spikes are firm at $1.80, base, and small railroad spikes at $1.80, base. These prices are for carload and larger lots, 5c. per keg advance being charged for small lots.

Shafting.—An advance of two points has been made in prices of shafting by the leading makers, and we now quote cold rolled at 55 off in carload and larger lots and 50 per cent. off in small lots delivered in base territory. These prices are now absolute minimum of the market for this year or next year. Heavy contracts for shafting were placed before the advance, practically all the leading consumers covering for some time ahead and specifications against these contracts are coming in freely.

Rivets.—A meeting of the rivet makers will be held in New York this week, but it is not expected that prices will again be advanced. Consumers are specifying liberally on their orders and a fair amount of new business is being placed. Prices are firm and we quote: Structural rivets, ¾ in. and larger, 2.05c., base; cone head boiler rivets, ¾ in. and larger, 2.15c., base; ⅝ in. and 11-16 in. take an advance of 15c., and ½ in. and 9-16 in. take an advance of 50c.; in lengths shorter than 1 in. also take an advance of 50c. Terms are 30 days, net cash, f.o.b. mill.

Merchant Pipe.—The new demand for merchant pipe and for oil country goods continues heavy, the leading pipe mills being filled up for the next month or two. The expected advance in prices of steel pipe has not yet been announced, but may come at any time. The official discount on black steel pipe, ¾ to 6 in., is 80 and 5, and on iron pipe, ¾ to 6 in., 74 and 5, in carload and larger lots to the largest trade. It should be noted that these prices are absolutely minimum, and are only made to the large trade in carload and larger lots, jobbers charging the usual advances to the smaller trade for shipments from store.

Boiler Tubes.—Heavy contracts for boiler tubes continue to be placed by leading railroads and inquiries are in the market for a large tonnage for other roads. The new demand for merchant tubes is more active now than it has been at any time in the past year, and it is stated that regular discounts on both locomotive and merchant tubes are being absolutely held.

Iron and Steel Scrap.—This trade has been somewhat quiet, no large sales of material by dealers to consumers being reported. Prices on heavy steel scrap and on borings and turnings continue somewhat weak, and we quote heavy steel scrap at $17.50 to $17.75 for delivery to leading consuming points in the Pittsburgh district. Prices on other grades of scrap, per gross ton, f.o.b. Pittsburgh, are as follows: No. 1 cast scrap, $17.25 to $17.50; No. 2, $16.25 to $16.50; bundled sheet scrap, $16.25 to $16.50; No. 1 railroad malleable, $16 to $16.25; rerolling rails, $18.25 to $18.50; for delivery at Newark, Cambridge or Cumberland, Md.; grate bars, $14 to $14.25; No. 1 busheling scrap, $16.25 to $16.50; No. 2, $13.25 to $13.50; low phosphorus melting stock, 0.04 and under, $21 to $21.25; steel axles, $21.50 to $21.75; iron axles, $27.50 to $28; locomotive axles, $28 to $28.25; old car wheels, $18.50 to $18.75; No. 1 railroad wrought scrap, $18.50 to $18.75; cast iron borings, $11 to $11.25; machine shop turnings, $13.25 to $13.50. Sheet bar crop ends are firm at $19.50, at shipping point.

Coke.—No large sales of furnace coke have been made in the past week, but a local coke interest reports that it has entered several contracts for standard grades of 72-hour foundry coke for delivery in the first half of 1910 at $2.50 per net ton at oven. We quote standard Connellsville furnace coke for first half of next year at $2.80 to $2.90 per net

ton, at oven, while 72-hour foundry coke of the best grades is held at $3 and up to $3.50 per net ton, at oven, for first half. Last week the Klondike and Connellsville regions turned out 444,382 tons.

William Wieman severed his connection with George P. Bassett, Jr., November 16, and is now associated with the firm of Banning, Cooper & Co., Ltd., iron and steel factors, Lewis Building, Pittsburgh, Pa.

The Ashland Iron & Mining Company, operating the two Ashland blast furnaces at Ashland, Ky., has appointed Walter-Wallingford & Co., People's Bank Building, Pittsburgh, its exclusive agents for the sale of its product of Bessemer, ferrosilicon and high silicon pig iron, in the Pittsburgh territory. This territory embraces Harrisburg and Buffalo on the east and Cleveland, Akron and Wheeling on the west and all intermediate territory.

Cincinnati.

CINCINNATI, OHIO, November 17, 1909.—(By Telegraph.)

There is a lull all along the line in the local markets, with a more perceptible softening of the old material situation. All agencies report a splendid showing for shipments on contracts, however, on both crude and finished products, indicating that the consumption of iron and steel and its manufactured shapes has not fallen off and is rather increasing. The belief is general that no material improvement may be expected before the first of the year. President George M. Verity of the American Rolling Mill Company, Middletown, Ohio, confirms the report that indications point to the establishment in that city of the new large plant which his company will build. As soon as this is definitely settled and officially announced, there will be an immediate planning for buildings and equipment. Coke is strong.

Pig Iron.—Several large Eastern concerns have inquiries in for basic for next year. One which recently bought 15,000 to 20,000 tons is figuring on 5000 to 10,000 more. An Ohio manufacturer of furnaces and stoves wants 1000 tons of No. 2 foundry for prompt and first quarter shipment. A new plant in southern Ohio has an inquiry out for some basic iron. Three 500-ton lots of foundry iron are wanted by melters in nearby territory, one lot for prompt, another for the first half and the other for prompt and over the next five months. It is reported that the malleable buyers of last week have all contracted. There has been a good movement in mill cinder the past few days, contracts for 20,000 to 25,000 tons having been made by local sales agencies for delivery to the furnaces. The price is regulated by conditions at mill and furnace respectively; the average price, however, being around $4 to $4.50 per ton. The demand for low grade irons has subsided considerably, and a few small lots of forge are in evidence at $13.50, Birmingham. There is no change in high silicons. Word from the South indicates that all furnaces are in excellent shape; iron is being shipped out to the maximum requirements, and there are no hold-ups and no cancellations, indicating a healthy consumption. The range on Southern No. 2 is still $14.50 to $15, Birmingham, for prompt and remainder of the year, but the few furnace companies willing to sell at the minimum figure are considering but limited tonnages, and $15 is the minimum for next year. A rumor here says that a little speculative iron held by old material people is likely to be heard from in a few days and at bargain prices. For prompt delivery and remainder of the year, based on freight rates of $3.25 from Birmingham and $1.20 from Ironton, we quote as follows:

Southern coke, No. 1 foundry	$18.25 to $18.75
Southern coke, No. 2 foundry	17.75 to 18.25
Southern coke, No. 3 foundry	17.25 to 17.75
Southern coke, No. 4 foundry	16.75 to 17.25
Southern coke, No. 1 soft	18.25 to 18.75
Southern coke, No. 2 soft	17.75 to 18.25
Southern gray forge	16.75 to 17.00
Southern mottled	16.75
Ohio silvery, 8 per cent. silicon	20.20
Lake Superior coke, No. 1	18.70 to 19.20
Lake Superior coke, No. 2	18.20 to 18.70
Lake Superior coke, No. 3	17.70 to 18.20
Standard Southern car wheel	24.75 to 25.25
Lake Superior car wheel	21.75 to 22.25

(By Mail.)

Coke.—The market is firm, but there has been a little let up in the buying with some agencies, suggesting that early needs have for the most part been supplied. The car situation is a little easier, except in the New River district. For spot Connellsville foundry grades the asking price is $3.25 to $3.40 per net ton at oven, and the premium for extended deliveries remains at about 10c. Connellsville furnace grades are quotable at $2.85 to $3 for spot deliveries and contracts are written at about $3 as the minimum. Wise County producers are asking $3 to $3.25 for spot foundry and $2.35 to $2.50 for furnace business. No contracts are taken at this time beyond the first half. The general situation is regarded by authorities as about the same as in the iron market.

Structural Material.—The demand continues good, although there are no specifications for any heavy tonnages from this immediate locality. The McClintic-Marshall Construction Company, Pittsburgh, took the contract for requirements for the new Ohio Mechanics' Institute, Cincinnati. Deliveries are still unsatisfactory on certain standard sizes, although some sizes are deliverable on comparatively short notice. The price is well maintained at 1.60c., Pittsburgh, and 8 to 12 weeks is about the best that can be done on the most popular sizes. Plates are a little easier, and six to eight weeks is possible; the price is firm at 1.55c., Pittsburgh, on ¼ in. and heavier. Some sales have been made on a basis of 1.60c. at mill.

Bars.—Certain of the large interests are turning down proffered business on steel bars, especially open hearth, at 1.50c., Pittsburgh. Orders are keeping up well and leading makers are 12 to 25 weeks behind on deliveries. There appears to be no shading. Iron bars are firm, at 1.60c. to 1.65c., Cincinnati.

Sheets.—The market continues firm. Local mills have taken cognizance of the general advance promulgated on the 11th, and prices on black No. 28 one-pass box annealed are quoted here at 2.55c. in carloads lots; No. 28 galvanized, flat, 3.65c.; No. 28 painted, corrugated, at $1.82 per square, and $3.08 for galvanized, 2½-in. corrugations. On less than carload lots the price is $3 per ton advance for black and galvanized and $2 per ton more on the other items. Local interests report some excellent sales on these bases. Three to five weeks are about the best deliveries possible on select business, and jobbers generally in this section are replenishing depleted stocks. Some authorities look for another advance about January or February.

Old Material.—In comparison with last month's heavy business, dealers in this market report the situation weak. Prices on many items are off at least 25c. per ton, and there is no contracting of any consequence. Such business as is going is between dealers, and there is reported considerable of this. The larger interests look for little change in the situation before the first of the year. The only railroad offering under consideration in this market is the Norfolk & Western list, which is of good size. As nearly as the market can be gauged under the ruling conditions, dealers' asking prices for delivery in buyers' yards, Cincinnati and southern Ohio, are as follows:

No. 1 R. R. wrought, net ton	$14.00 to $14.50
Cast borings, net ton	7.75 to 8.25
Heavy melting steel scrap, gross ton	15.00 to 16.00
Steel turnings, net ton	8.75 to 9.25
No. 1 cast scrap, net ton	13.75 to 14.25
Burnt scrap, net ton	10.00 to 10.50
Old iron axles, net ton	18.50 to 19.00
Old iron rails, gross ton	18.00 to 18.50
Old steel rails, short, gross ton	15.00 to 15.50
Old steel rails, long, gross ton	16.00 to 16.50
Relaying rails, 56 lb. and up, gross ton	22.00 to 22.50
Old car wheels, gross ton	15.50 to 16.00
Low phosphorus scrap, gross ton	17.50 to 18.00

Matthew Addy & Co. have been appointed exclusive sales agents for the La Follette Coal, Iron & Railway Company. The stack which has been out of blast since early in 1907, will go in about January 1 on foundry. F. P. Howe, treasurer and general manager of the Cranberry Iron Company, is the new president and manager under the reorganization.

The ovens of the by-product coke plant of the Citizens' Gas Company, Indianapolis, Ind., will be charged on the 18th, using a mixture of Wise County in conjunction with a certain percentage of low volatile coal from the Pocahontas region. Tests made of the product indicate a superior foundry coke in chemical and physical properties. The Domhoff-Joyce Company, Cincinnati, Chicago, St. Louis and Indianapolis, is exclusive sales agent.

Buffalo.

BUFFALO, N. Y., November 16, 1909.

Pig Iron.—While there is not quite as much activity as during the preceding week, so far as the placement of new business is concerned, a good aggregate of small orders was taken on by the different furnaces. An extraordinarily large tonnage of urgency specification against existing contracts has been received and shipments going forward from furnaces are heavy. The most of the new business which came in during the week was for general foundry lines for first half delivery. Inquiries received lead to the impression among furnacemen that there are pretty large consumptive requirements for the first half of next year not yet covered by the rank and file of foundry interests, notwithstanding the fact that furnaces are pretty well filled up for their make for the first six months, which will have a tendency to strengthen prices. There is considerable inquiry for basic from Eastern districts, but very little is obtainable, as the local producers are reported to be sold up for six months ahead. There has been no material change in prices during the week, the schedule given below fairly representing the market, although one furnace interest is quoting a higher range, with a minimum of $18 for No. 1 X foundry and of

$17.50 for No. 2 X for first quarter and half delivery. We quote as follows per gross ton, f.o.b. Buffalo, for remainder of year and first quarter:

No. 1 X foundry	$17.00 to $17.50
No. 2 X foundry	16.75 to 17.25
No. 2 plain	16.50 to 17.00
No. 3 foundry	16.25 to 16.50
Gray forge	16.00 to 16.50
Malleable	17.50 to 18.00
Bessemer	19.25 to 19.75
Basic	18.25 to 18.75
Charcoal	20.25 to 21.00

Finished Iron and Steel.—The inquiry in general lines continues good. In structural material the demand is somewhat less than for the past few weeks. There is an increased trade in cold rolled steel and considerable business is being placed at the higher prices inaugurated last week, there being in fact a heavier movement in this product for this district than for several years. Notable evidence is seen of a very decided increase in the construction of new manufacturing plants in this district and additions to existing factories and industries which will in the near future create a largely augmented demand from this quarter for fabricated material, as well as for power transmission appliances and machinery equipment. The principal developments in structural steel requirements for the Buffalo district during the week were 400 tons of fabricated steel for a new warehouse for the Buffalo Glass Company and 300 tons for new gate houses for the power plant of the Hydraulic Power & Mfg. Company at Niagara Falls for which bids are being asked.

Old Material.—The condition of the market is one of extreme quietness, one of the causes being the continued embargo upon the receipt of scrap material by the Lackawanna Steel Company, which prevents the forwarding of contract material by local dealers. There are no indications of weakness in prices, although there has been a slight shading in one or two instances on the part of dealers who had extra stock accumulated on track which they were desirous of moving. We quote as follows, per gross ton, f.o.b. Buffalo, prices being more or less nominal.

Heavy melting steel	$16.50 to $17.00
Low phosphorus steel	21.00 to 22.00
No. 1 railroad wrought	18.00 to 18.25
No. 1 railroad and machinery cast scrap	17.00 to 17.50
Old steel axles	20.50 to 21.00
Old iron axles	26.00 to 26.50
Old car wheels	17.50 to 18.00
Railroad malleable	16.50 to 17.00
Boiler plate	14.50 to 15.00
Locomotive grate bars	13.00 to 13.50
Pipe	14.00 to 14.50
Wrought iron and soft steel turnings	12.00 to 12.50
Clean cast iron borings	10.00 to 10.50
No. 1 busheling scrap	14.00 to 14.50

Cleveland.

CLEVELAND, OHIO, November 16, 1909.

Iron Ore.—The movement down the lakes has been seriously interfered with the past few days by the wreck of a gate in the Poe lock at Sault Ste. Marie. The larger downbound boats were held up several days until the lock could be repaired, and considerable delay was experienced by other boats while awaiting locking turn. As a result of the delay some of the big ore freighters will lose nearly a week's time, and it is now doubtful if the record of shipments for November will be broken. Freezing weather set in this week in the mining districts, and from now on there will be delay in loading cargoes at the upper lake ports. Following the reservation of practically all the Bessemer grades for next season little inquiry is being made for ore and nothing has been done as yet regarding next season's prices. When the ore firms get together to take up the matter of advancing prices, it is likely that the question of reducing the guarantee on ores will be discussed, and there is a possibility that some action will be taken along that line. There has been talk for some time of changing the guarantee, but no conferences have been held on the subject. The last change in the base guarantee was made three years ago when the Bessemer guarantee was reduced from 56.70 per cent. to 55 per cent. iron in natural state, and the non-Bessemer guarantee was reduced from 52.80 to 51.50 per cent. There is talk now of further reducing the Bessemer guarantee to 52.50 per cent. and the non-Bessemer to 50 per cent. The quality of ores has gone down somewhat during the past three years. Several ore men think that the Bessemer guarantee should be lowered, but there is not so much desire to have the non-Bessemer guarantee changed. Prices at Lake Erie docks, per gross ton, are as follows: Old Range Bessemer, $4.50; Mesaba Bessemer, $4.25; Old Range non-Bessemer, $3.70; Mesaba non-Bessemer, $3.50.

Pig Iron.—The market continues quiet. About the only activity is in foundry grades, and the only sales reported are in small lots. Some of the foundries find that they will need a little more iron than the contracted for for the balance of the year, and from these orders are coming for lots ranging from a carload to 100 tons. A few consumers have accumulated considerable iron in their yards and are asking furnaces to hold back somewhat on shipments. Others, however, are taking all their iron as fast as they can get it, and in some cases furnaces are behind in their shipments. In spite of the dullness prices remain firm. Local furnaces quote No. 2 foundry at $18, at furnace, for any delivery. In the Valley No. 2 foundry is held at $17.25, at furnace, for the remainder of the year and first quarter, and $17.50 for the first half. For the remainder of the year we quote, delivered, Cleveland, as follows:

Bessemer	$19.90
Northern foundry, No. 1	$18.65 to 18.90
Northern foundry, No. 2	18.15 to 18.40
Northern foundry, No. 3	17.65 to 17.90
Southern foundry, No. 2	19.35
Jackson County silvery, 8 per cent. silicon	20.55

Coke.—Many foundries find that they need more coke than they contracted for and this has resulted in a good demand for foundry coke for spot shipment. Foundries not already covered for the first half are waiting in the hope of getting lower prices. We quote Connellsville 72-hour foundry coke at $3.25 to $3.40 per net ton at oven, for spot shipment, and $3.25 to $3.50 for the first half. Standard Connellsville furnace coke is held at $2.75 to $2.85 for the remainder of the year and $2.85 to $3 for the first half.

Finished Iron and Steel.—Specifications on contracts for steel bars, plates and structural material continue heavy and no improvement is noticed in deliveries. Not a large tonnage in new business is coming out, but the demand for small lots for quick delivery continues good, and premium prices are being paid for early delivery. All the mills are holding to 1.50c., Pittsburgh, for steel bars, with the exception of one interest, that is continuing to quote 1.45c. Plates and shapes are held at 1.60c., Pittsburgh, for forward delivery, and some contracts for the first quarter are being entered at that price. For early shipment consumers are paying a premium of $1 to $2 a ton, the higher price being for quick shipment. In structural lines considerable new work is in prospect in this city, for which contracts will be placed during the winter. New work that has developed during the week includes a factory building to be erected by the Diamond Rubber Company, Akron, Ohio, requiring about 1000 tons, and a factory building to be built by the White Sewing Machine Company, Cleveland, 800 tons. The contract for the latter is understood to have been practically closed, the work going to a local fabricator. The outlook for the lake shipbuilding industry continues promising. In addition to the contracts closed recently several boats are being figured on, and the prospects are that the lake shipbuilding yards will have all the work they can do for the coming season. The demand for iron bars continues good and prices are firm. The Lake Shore Railroad has placed contracts for a portion of its requirements for next year, but is understood to have been unable to secure contracts for delivery beyond about May 1. We quote iron bars at 1.65c., Cleveland. The demand for sheets continues fairly active. Following the advance of $1 a ton on blue annealed, $2 a ton on box annealed and $3 a ton on galvanized by the leading interest, the independent mills have made a similar advance. Some are taking contracts for the first quarter, but others are declining to make contracts for delivery after the first of the year. The demand for forging billets for prompt shipment in 25 to 50 ton lots continues good and sales are being made at $32, at mill, for quick shipment.

Old Material.—The tone of the scrap market is decidedly weak. This is the result of the continued absence of a demand and the throwing on the market of large tonnages. Dealers bought heavily last month for shipment during November, with the expectation that the demand would hold up and that prices would be stiffer. This scrap is now being shipped in and must be sold or unloaded in the yards. Consumers still seem to be well stocked and are showing little interest in the market. About the only grades moving are turnings and cast, for which there is a limited demand in small lots. While most quotations remain unchanged, they would doubtless be shaded. Prices per gross ton, f.o.b. Cleveland, are as follows:

Old steel rails	$16.50 to $17.00
Old iron rails	20.50 to 21.00
Steel car axles	20.50 to 21.00
Old car wheels	17.50 to 18.00
Heavy melting steel	16.00 to 16.50
Relaying rails, 50 lb. and over	22.50 to 23.50
Agricultural malleable	15.00 to 15.50
Railroad malleable	17.00 to 17.50
Light bundled sheet scrap	11.50 to 12.00

The following prices are per net ton, f.o.b. Cleveland:

Iron car axles	$21.50 to $22.00
Cast borings	9.00 to 9.25
Iron and steel turnings and drillings	11.00 to 11.25
Steel axle turnings	12.00 to 12.50
No. 1 busheling	14.50 to 15.00
No. 1 railroad wrought	17.00 to 17.50
No. 1 cast	15.50 to 16.00
Stove plate	12.50 to 13.00
Bundled tin scrap	11.00 to 11.50

The Carnegie Steel Company's blast furnace at Zanesville, Ohio, which has been idle for several years, was blown in November 15. It has a daily capacity of about 200 tons.

Birmingham.

BIRMINGHAM, ALA., November 15, 1909.

Pig Iron.—There has been some weakening in spot iron, but it has in no way had a general effect on the market as viewed by the actual producers. Quite a little tonnage, in small lots, was sold the past week, some for prompt shipment and some for delivery next year. Probably a slight concession under the base price of $15 at the furnace was made by certain merchants; but we are yet unable to find where a furnace company has made a sale under this price. The movement of stock from the yards continues comparatively good, the only drawback being shortage of cars. A canvass as to condition of order books reveals the fact that undoubtedly the furnace companies have secured sufficient business to run them well into next year. This being the case, the presence—or even movement—of considerable resale iron will not have a serious bearing on the market, for it will be remembered that probably 35,000 tons will cover the warrant iron in the district. This tonnage distributed over several months will have no telling effect. Indeed, the furnace companies seem to feel very comfortable over the situation. Besides the recent orders booked for next year's delivery, it must be borne in mind that a considerable tonnage of low-priced iron is yet on the books of producers; and, in all probability, some of it will not be delivered this side of the first quarter of 1910. In sounding the charcoal iron market in the South, the prevailing price seems to be $22 at the furnace, with reported good movement of stock.

Cast Iron Pipe.—There is no recent advance recorded by producers of heavy pipe. The general tone of the market, however, points to an advance soon. The different manufacturers here are still running full time, and report that they manage to keep their stock pretty well cleaned up. There has been some recent improvement in inquiries from the extreme West; and especially is this true of gas pipe. One of the large manufacturers in the district reports that inquiries from municipalities are comparatively good, and he expects good business from that source in the near future. Of course, the advance in pipe has not been at all in keeping with the advance in pig iron; but manufacturers feel that it must come sooner or later. Following prices are quoted, f.o.b. cars at the foundry: 4 to 6 in., $26; 8 to 12 in., $25; over 12 in., average $24, with $1 per ton extra for gas pipe.

Old Material.—The continued inactivity of the spot pig iron market, at least, has reflected materially its effect on the scrap iron market. This is particularly true of wrought and cast scrap. Heavy melting steel holds its own well, but there has been a decline in prices all down the line of at least 50c. per ton. Dealers continue to accumulate what they can gather with the intention of holding it on their yards. Following quotations, per gross ton, f.o.b. cars Birmingham, prevail:

Old iron axles	$20.00 to $20.50
Old iron rails	16.00 to 16.50
Old steel axles	19.00 to 19.50
No. 1 railroad wrought	14.50 to 15.00
No. 2 railroad wrought	12.00 to 12.50
No. 1 country wrought	12.00 to 12.50
No. 2 country wrought	11.50 to 12.00
No. 1 machinery	13.00 to 13.50
No. 1 steel	12.50 to 13.00
Tram car wheels	12.00 to 12.50
Standard car wheels	14.50 to 15.00
Light cast and stove plate	11.00 to 11.50
Cast borings	6.50 to 7.00

San Francisco.

SAN FRANCISCO, November 10, 1909.

The situation of steel products in this market is most encouraging, and buying continues fairly heavy in all departments. While prices generally have not advanced, a firmer feeling prevails, and a perceptible rise in values is expected within the next 60 days. While the tonnage in some lines, such as structural material, has materially increased within the last few weeks, there has been some slight reduction in the volume of business, owing to the approach of the new year. Local merchants, as well as some large consumers, are preparing to take stock within a few weeks, and are accordingly anxious to reduce their holdings to the smallest limits convenient. The tendency to reduce immediate purchases is accompanied by a general large inquiry for deliveries after the first of the year, but so far nearly all the rolling interests have been unwilling to take on business of this nature. A heavy increase of orders is assured, however, with the opening of books for next year's business, as local merchants are in some cases having difficulty in meeting the current demand. The tonnage of finished products now moving to the Pacific Coast appears to be limited more by the output than by the demand, as considerable delay is experienced in getting new supplies in nearly all lines, and mill representatives anticipate a larger business in this territory next year than ever before. The machinery market is about normal, with several large installations in prospect for the coming year.

Rails.—The movement of light rails from stock continues on about the same scale as earlier in the fall, and liberal orders are being placed with the rolling interests in view of large prospective requirements. A fair tonnage of standard sections is also being booked, though individual orders as a rule are small. The prospective requirements of the smaller roads in the interior of this State for the coming year are comparatively large, as considerable delayed work is now going forward. Several new projects are being promoted in the north, as well as in California, but without any prospect of immediate business.

Bars.—The current demand continues unabated, with large requirements in prospect for the first half of 1910. Stocks on hand are more closely sold out than for nearly two years, while the difficulty of getting additional supplies is causing general inconvenience. Local jobbers report that it takes three months or more under present conditions to get deliveries of new orders. While prices are very firm, no general advance is anticipated before the first of the year, as most of the stock now moving was purchased on former contracts, but after that a sharp rise is expected. Merchants quote the following prices on bars, from store, San Francisco: Steel, 2.40c.; iron, 2.20c.

Structural Material.—Local building records indicate very little improvement during October, with an actual decrease in structures of a permanent nature. With several fabricating contracts of moderate importance, however, the situation is by no means discouraging, though the tonnage for coast points outside of San Francisco has been the leading feature. While most Eastern interests, on account of accumulations of other business and comparatively low prices prevailing for local work, are holding off from this market, the leading interest has booked a very heavy tonnage for coast work recently, and the largest local fabricator has taken more work than at any time since last spring, while the smaller local shops are taking larger contracts than for many months. While work will not be started on most of the contracts just let until late in the winter, some delay is occasioned on the work in hand by difficulty in securing prompt deliveries of the plain material. In view of increased requirements, local fabricators are placing larger orders with the mills. Figures are now being made on a large number of buildings of moderate importance in this city, and while few contracts are likely to be let during the remainder of the year the outlook is favorable for a larger tonnage after that time. A material increase of business from Portland and the Puget Sound cities is also in prospect. Arrangements have been made to operate a line of steamers between Antwerp and this port, for which six vessels have already been chartered, and importers are offering to land structural shapes and other finished products here at prices materially below those now current. It is reported that a price of about 1.70c. has been named on structural shapes. Beams and channels, 3 to 15 in., from store in San Francisco, are quoted at 2.65c.

Pig Iron.—The only recent arrival of any consequence was 3250 tons for Portland, Ore. Local conditions are not so encouraging as they were recently considered. Prices continue firm in response to conditions in other markets, but quotations here are largely nominal, as there has been very little movement for the last several weeks. Developments in the way of foundry work have been below expectations, contracts for city supplies being still the principal feature, and as most melters are amply supplied, there is little demand for either spot or future delivery. Quotations are nominally as before: Chinese, $25; English and Continental, $23 to $24.50; Southern, foundry No. 2, $25.

Cast Iron Pipe.—No contracts have been placed recently calling for any considerable tonnage, but the movement has been very satisfactory on account of small buying all over the coast. The upward tendency of the market has brought out a great deal of business which had been held back, and the total movement is more active than for some time. Several municipal contracts are in prospect for the early part of next year, but none of much individual importance. San Francisco has just acquired a small water plant to supply a section of the city, and will probably install some improvements within the next year. Prices are unchanged, but firm at the recent advance, with a further rise in prospect, quotations being $39 per net ton for 4-in., $38 for 6 to 12-in., gas pipe $1 extra.

Merchant Pipe.—Few inquiries are coming up for immediate delivery, owing to a general inclination on the part of both jobbers and large consumers to reduce stocks before the end of the year. Mill interests, however, are receiving heavy inquiries for delivery after the first of the year, but are unwilling to take orders for such deliveries at present. The movement from stock continues on a large scale, with supplies of moderate proportions, though there is no immediate scarcity. Jobbing prices are quite firm, but without further advance. The oil well business is in a most encouraging condition, as investment in that direction has increased, and new wells are being drilled by many interests. The most encouraging feature is the extensive development being carried out by the larger railroad interests. While no large

orders have been booked from the oil fields within the last few weeks, the outlook is for a larger business in that quarter during 1910 than for any previous year.

Old Material.—All lines of scrap remain quiet, but the market is in a fairly good condition, with no unduly large accumulations of any description offered. There is a little movement of cast scrap, but most buyers are well supplied, while the small stocks on the market are held at high prices. Wrought scrap is fairly firm, but the market is quiet, and steel scrap is not in demand. Quotations are practically as before: Cast scrap per gross ton, heavy $18, light $17; steel scrap per gross ton, $6 to $7; railroad wrought scrap per net ton, f.o.b. San Francisco, $10.50 to $11; old steel rails per net ton, $9.50.

The Moore & Scott Iron Works has taken a contract for building a steel tank steamer for the Associated Oil Company.

The Allis-Chalmers Company has moved its San Francisco headquarters to 160 Second street. The company has taken a number of large orders for electrical equipment recently.

The Columbia Steel Company has been incorporated at Martinez, Cal., with a capital stock of $500,000, by C. A. Hooper, C. M. Gunn, C. S. Cole, W. E. Creed, C. G. Dall and others. The company has purchased a 20-acre factory site at Black Diamond, Cal., where it proposes to build a large plant for the manufacture of steel products.

The German Iron Market.

BERLIN, November 4, 1909.—While the quieter tone of the market mentioned in last week's letter still prevails, prices have taken another turn upward. On the Düsseldorf Exchange on Friday, pig iron again rose about 1 mark above the quotations of a fortnight earlier. The following quotations were noted, compared with October 15: Siegerland puddling iron, 56 to 58 marks (against 55 to 58); Germaa foundry No. 1, 58 to 60 (57 to 79); No. 3, 57 to 59 (56 to 58); German hematite, 60 to 62 (58 to 60); soft steel bars, 102 to 108 (100 to 106); band iron or strips, 125 to 130 (125 to 127.50).

The Association of German Rivet Manufacturers met several days ago and voted a raise of 5 marks per ton on rivets for boiler making, bridge construction and shipbuilding. The increased prices have already been put into force. In the meeting a proposal to transform the association into a syndicate, with a central selling agency, was brought forward, and it was received favorably on all sides. It was decided to proceed at once with the necessary steps for effecting the change.

The Wire Rod Association several days ago voted to begin taking orders for the first quarter of 1910 at the present price, which is 127.50 marks. It was given out at the same time that the amount of work on hand at the various mills was of satisfactory volume.

A report on the market for scrap in the Silesian District mentions a decided improvement since the middle of October. The demand is much more active and prices are higher, while the works themselves are using up more of their own scrap than hitherto. There is an active demand for export. Not only Austria and Italy are buying scrap there, but American buyers have appeared in the market and assisted in bidding up prices. In the great iron district of the West the big mixed works are offering less pig in the open market than hitherto, as they are working up their own product to a larger extent than was possible several months ago.

At the annual meeting several days ago of the Bochum Company (Bochumer Verein für Bergbau und Gusstahlfabrikation) the general manager made some interesting remarks about the American situation and its bearings on the German market. While there was a buoyant feeling in America, he said, we have felt very little of it here as yet. There was one very significant thing in connection with the developments on the other side, namely, that America was buying ores in Europe, particularly in Sweden, in large quantities. This he regarded as not very agreeable for the German market, since it had caused the prices of ore to rise. America had also recently bought steel scrap in Lorraine, which was for shipment not merely to works on the Eastern seaboard, but partly for consumption in the interior. At this meeting, as well as that of the Laura-Hütte of Silesia, which was held about the same time, a rather moderate optimism was manifest in the speeches of the managers.

In spite of the above remarks about American buying, it appears that a certain feeling of disappointment prevails in the trade that the takings for export to the United States have not yet come up to expectations. It is mentioned in one of the market reviews that many inquiries from the United States regarding pig iron have come in, but these have not led to many transactions. In another section of the trade, however, the hardware industry at Solingen, a considerable improvement in the American demand is mentioned. This, of course, applies chiefly to cutlery. In razors the American business in the medium and cheaper qualities is reported to have well-nigh ceased, owing to the big increase of the duty in the new tariff act; but orders for the better qualities are coming in more satisfactorily, and still better business is looked for within the next few weeks. The foreign demand for cutlery and some other forms of hardware has improved. It is mentioned that Argentina has sent in big orders for cavalry swords, and orders from Turkey are also expected. Home business is also looking up.

Another meeting of the heavy plate manufacturers was held at the end of last week and further steps were taken looking toward the organization of the trade. A further meeting was ordered for this week. Meanwhile a decision was reached to take no order for the heaviest sizes of plates at less than 110 marks, and to sell none at that price beyond the first quarter of 1910. This action, however, is without practical significance, since prices are already well above that minimum. The reports from the plate trade have improved to a marked degree. In thinner qualities the demand is very brisk, and prices have recently been lifted by several marks. The demand for next year's delivery remains good and large transactions have already been closed. The works, however, are not disposed to bind themselves at existing prices for very far ahead. In heavy plates business has also been much more active in recent weeks, and there is an increasing request for immediate delivery. Foreign markets are buying actively. Thinner qualities of plates are quoted at 125 to 130 marks; medium thicknesses, 120 to 122.50; boiler plates of soft steel, 118 to 120 and up to 125; heavy plates, 108 to 115. Export prices are about 3 to 4 marks lower than those here quoted.

Iron and Industrial Stocks.

NEW YORK, November 17, 1909.

All classes of stocks have been consistently strong since our last report. While chief attention has been given by speculative interests to some of the railroad stocks, much greater attention than usual has been paid to the copper stocks by reason of the rumors in circulation that either a consolidation of the most important copper producers or a trade agreement to control production and prices was in process of formation. The iron and steel stocks have been steadily held, with comparatively unimportant fluctuations. The range of prices on active iron and industrial stocks from Thursday of last week to Tuesday of this week was as follows:

Allis-Chalm., com..	15¼- 15⅞	Pressed St., pref..	105½-106
Allis-Chalm., pref..	53½- 56¼	Railway Spr., com.	49¼- 51
Beth. Steel, com..	34¼- 35½	Republic, com.....	47 - 48¼
Beth. Steel, pref...	67 - 69	Republic, pref.....	105 -106¼
Can, com.....	13¾- 14¾	South. I. & S., com.	21½- 23½
Can, pref.....	83¾- 85⅛	South. I. & S., pref.	52 - 53
Car & Fdry, com..	74⅛- 75¼	Sloss, com.....	90 - 92¼
Car & Fdry, pref.....	119⅜	Pipe, com.....	33
Steel Foundries...	64 - 65½	Pipe, pref.....	87 - 87½
Colorado Fuel.....	47⅞- 49⅞	U. S. Steel, com...	89 - 91⅜
General Electric..	162 -163¾	U. S. Steel, pref...	125⅞-126⅞
Gr. N. ore cert....	80⅜- 81¾	Westinghouse El...	84½- 85½
Int. Harv., com...	103 -107¾	Chi. Pneu. Tool...	38 - 38¾
Int. Harv., pref.....	123½	Am. Ship, com....	67¼- 67½
Int. Pump, com...	52⅞- 54½	Am. Ship, pref.....	110½
Int. Pump, pref...	89¾- 90¾	Cambria Steel.....	46⅞- 48⅜
Locomotive, com...	61½- 62¾	Lake Sup. Corp....	27 - 28¼
Locomotive, pref..	115¼-116	Penn. Steel, pref..	116 -116½
Nat. En. & St.,com.	20¾- 23	Crucible Steel, com.	13½- 14
Nat. En. & St., pref....	94½	Crucible Steel, pref.	83⅜- 84¼
Pressed St., com..	51¼- 54⅜	Harb.-W. Ref., pref.....	95

Last transactions up to 1.30 p.m. to-day are reported at the following prices: United States Steel common 90⅞, preferred 126½; Car & Foundry common, 74⅞, preferred 120; Locomotive common, 62¼, preferred 115¼; Steel Foundries 64; Colorado Fuel 51; Pressed Steel common 54¾, preferred 106; Railway Spring common 50½; Republic common 47½, preferred 106⅛; Sloss-Sheffield common, 91¼; Cast Iron Pipe common 33, preferred 87⅜; Can common, 13¾, preferred 83⅞.

After January 1 of the coming year, the Sharon Steel Hoop Company will have retired all of its outstanding bonds and will be free from bonded indebtedness. Notice has been given to holders that the bonds will be redeemed, principal and accrued interest paid on January 1, 1910. The series to be retired amounts to $100,000.

In connection with the recent sale of $7,500,000 6 per cent. five-year notes of the Bethlehem Steel Corporation, President Charles M. Schwab states that the net book value of the assets of all the subsidiary companies, after all immediately contemplated additions to the plant have been made, eliminating the balance due the companies to each other and deducting all liabilities save this note issue, is $21,157,993, which is nearly three times the amount of notes which can be outstanding at any time.

The Amalgamated Asbestos Corporation, Ltd., has declared an initial dividend of 1¾ per cent. on the preferred stock. The company is a consolidation of various asbestos producing properties at Black Lake and Thetford in the Province of Quebec, Canada, and controls, it is claimed, 80 per cent. of the supply of asbestos in the Quebec District

and 70 per cent. of the supply of the world. The corporation is largely owned in the United States, including in its directorate Henry M. Whitney of Boston, James M. Beck of New York, Richard V. Mattison of Ambler, Pa., R. H. Martin of New York, H. H. Melville of Boston, and Theodore W. Cramp, H. A. Berwind, C. Hartman Kuhn and Howard Ellery Mitchell of Philadelphia.

Iron and Steel Bonds.

Chisholm & Chapman, 18 Wall street, New York, make the following quotations:

	Bid.	Asked.
Bethlehem Steel, 1st ext. 5s, due January, 1926....	89½	89¾
Bethlehem Steel purchase money 6s, August, 1998..	117	..
Buffalo & Susquehanna Iron 1st 5s, June, 1932.....	..	99½
Buffalo & Susquehanna Iron deb. 5s, January, 1926.	94	97
Dominion Iron & Steel 5s, July, 1929.....	95½	..
La Belle Iron 1st 6s, December, 1923.....	104¼	104¾
Lackawanna Steel 1st 5s, April, 1923.....	99	..
Maryland Steel 1st 5s, February, 1922.....	102	..
Pennsylvania Steel 1st 5s, November, 1917.....	..	103
Pennsylvania & Maryland Steel 6s, September, 1925 ..		110½
Republic Iron & Steel 1st 5s, October, 1934.....	101	102
Sloss Iron & Steel 1st 6s, February, 1920.....	106	..
Sloss Iron & Steel consol. 4½s, April, 1918.....	95	..
Jones & Laughlin Steel 1st 4s, May, 1939.....	101⅝	..
United States Steel Corporation.		
Collateral Trust 5s, Series A, C, E, April, 1951....114½		115½
Collateral Trust 5s, Series B, D, F, April, 1951....114½		115½
Sinking Fund 5s, April, 1963.....	104⅞	105⅛
Union Steel 1st 5s, December, 1952.....	104¾	105¼
Clairton Steel 5s, 1908-1913.....	100	..
St. Clair Furnace 1st 5s, 1910-1939.....	100	..
St. Clair Steel 1st 5s, 1908-1926.....	100	..
Illinois Steel deb. 5s, January, 1910.....	99½	..
Illinois Steel 5s, April, 1913.....	100	..

All bonds quoted "and interest."

Dividends.—The Sloss-Sheffield Steel & Iron Company has declared a quarterly dividend of 1¼ per cent. and an extra dividend of ¾ per cent. on the common stock payable November 30. The extra dividend represents compensation to the common stockholders for the amount lost when the dividend was reduced to 4 per cent. during the depression.

The United States Cast Iron Pipe & Foundry Company has declared a quarterly dividend of 1¾ per cent. on the preferred stock, payable December 1.

The Pittsburgh Valve, Foundry & Construction Company, Pittsburgh, has declared a quarterly dividend of 1½ per cent., payable November 30.

The General Electric Company has declared the regular quarterly dividend of 2 per cent., payable January 15.

Metal Market.

NEW YORK, November 17, 1909.

THE WEEK'S PRICES.

Cents per pound.

	Copper.			Lead.		Spelter.	
Nov.	Lake.	Electrolytic.	Tin.	New York.	St. Louis.	New York.	St. Louis.
10....	13.25	13.00	13.45	4.40	4.27½	6.30	6.15
11....	13 37½	13.12½	13.45	4.40	4.27½	6.30	6.15
12....	13.25	13.00	13.75	4.40	4.27½	6.30	6.15
15....	13.25	13.00	13.75	4.40	4.27½	6.30	6.15
16....	13.25	13.00	13.75	4.40	4.27½	6.30	6.15
17....	13.25	13.00	13.75	4.40	4.27½	6.30	6.15

Copper.—The persistent rumors to the effect that leading copper interests are discussing a proposed consolidation are having their effect on the trade, and regardless of denials from those concerned many are giving some credit to the rumors that are rife. In consequence the market is a hesitating one and the buying movement which prevailed a week ago has fallen off, although there are many inquiries from consumers who have not as yet supplied their needs. The report of the Copper Producers' Association, which was made public a week ago to-day, made a favorable impression and gave the market a hopeful tone. The exports of copper are not so heavy, and it is believed that more metal is going into consumption abroad than the general trade is aware of. European fortnightly copper statistics show that the visible supply of copper increased 3595 tons since the previous report and stocks of metal increased 4995 tons. These statistics are of a general nature, however, and it may be that some consumers there are getting very low in their stocks, so a good buying movement abroad would take up considerable of the metal. At present copper is firm. Electrolytic is 13c. and lake 13.25c. It was reported this afternoon that the United Metals Selling Company was asking 13.50c. for lake copper, but plenty of the metal was offered by other interests at 13.25c. In London to-day the market was steady and 500 tons of spot and 1600 tons of futures were sold. Spot copper brought £60 and futures £61. So far this month 10,447 tons of copper have been sent abroad.

Pig Tin.—The market is quiet, but prices are being held fairly firm. Last Thursday and Friday some little buying was done, but during the other days of the week there were hardly enough transactions to make a market. There are some good inquiries from consumers and their influence on the market is keeping prices fairly high. At present pig tin is selling for 30.75c. Spot tin was sold in London to-day for £139 12s. 6d and futures for £141 12s. 6d. The sales were: Spot, 100 tons and futures, 200 tons.

Tin Plates.—Following the example set by the American Sheet & Tin Plate Company in putting tin plates up 10 cents a box, independent mills are asking an equal advance, while in some cases premiums which prevailed before the announcement of this advance have been raised correspondingly. In other words, some of the independent mills are asking from 10c. to 15c. more a box than the usually quoted market price. It was thought that the advance might relieve the situation as regards the inability of the mills to supply the demand, as it was almost hoped in some quarters that some purchasers would shade down their requirements or withdraw from the market. This has not been the case, however, and buyers as a rule are considering the question of getting deliveries rather than to discuss the question of price. For 100 I C coke plates we quote $3.84.

Lead.—While lead has not suffered in price, the tone of the market is quieter. A fair volume of business is being done and while the American Smelting & Refining Company continues to ask 4.40c. for the metal, independent interests are demanding 4.42½c. There were some sales early in the week at around 4.43c., but a falling off in the demand tended to shade the price down.

Spelter.—Spelter continues in good demand and sellers are having no trouble in getting 6.30c. It is the general opinion that no further advance will be made for a time, as there is plenty of spelter on hand.

Antimony.—Antimony continues quiet and prices are unchanged. Hallett's is 8.25c. and Cookson 8.30c. Outside brands can be had around 7.75c.

Old Metals.—The market is strong, with an advancing tendency. Following are dealers' selling prices:

	Cents.
Copper, heavy cut and crucible.....	12.87½ to 13.12½
Copper, heavy and wire.....	12.37½ to 12.62½
Copper, light and bottoms.....	11.62½ to 11.87½
Brass, heavy.....	9.00 to 9.25
Brass, light.....	7.50 to 7.75
Heavy machine composition.....	12.00 to 12.25
Clean brass turnings.....	8.50 to 8.75
Composition turnings.....	10.00 to 10.25
Lead, heavy.....	4.20 to 4.25
Lead, tea.....	3.90 to 3.95
Zinc scrap.....	5.00 to 5.25

New York.

NEW YORK, November 17, 1909.

Pig Iron.—The market is not without daily transactions, but these are of small amount and in contrast with recent activity the present lull is pronounced. Some buying for malleable works in this district and in New England is reported. Quotations on foundry iron for delivery next year are well maintained. Consumers are taking full deliveries under their contracts and in some cases are buying spot iron. We quote the New York market as follows: Northern No. 1 foundry, $19 to $19.50; No. 2 foundry, $18.50 to $19; No. 2 plain, $18 to $18.50. For next year's delivery, Alabama iron is quoted $19 to $19.25 for No. 2, though for this year $18.75 can be done.

Steel Rails.—The buying from Eastern mills is still backward, though one open hearth mill is quite well booked for the early months of 1910. The Great Northern order is variously reported at 42,000 and 47,000 tons, of which 15,000 tons was taken by the Lackawanna Steel Company. The Alabama mill which booked 21,000 tons last week for the Illinois Central sold 6000 tons to the Central of Georgia and 3000 tons scattering.

Structural Material.—Of the Brooklyn subway work the four sections in which the greatest amount of steel will be required have been let and the fabricated material will probably be furnished by the leading bridge company. The American Bridge Company is low bidder on the St. Louis bridge, other bidders in order being the McClintic-Marshall Construction Company, the Phoenix Bridge Works and the Pennsylvania Steel Company. The bridge will require 16,000 tons of steel, there being a considerable tonnage of large nickel steel eyebars. Levering & Garrigues were awarded the W. & J. Sloan Building at Twenty-eighth street and Eleventh avenue—800 tons of steel and several hundred tons of cast iron columns. A warehouse for the same interest is yet to be awarded. The Phoenix Bridge Works have taken 500 or 600 tons of bridges for the Boston & Maine. At Philadelphia the Stetson Building has been bid on, 1300 tons of steel being required. Snare & Triest were awarded the highway bridge at Newark, 1600 tons, to be built jointly by Hudson and Essex counties. For plain material we quote 1.71c. to 1.76c., tidewater, on shipments from mill and 2c. on material from stock, cut to length.

Ferroalloys.—Some large inquiries are out for ferromanganese and during the last week some excellent orders have been booked. Prices are being held firm, although early in the week some German ferromanganese was put on the market by foreign selling houses, and that caused a slight flurry. There was not enough of it to affect the market at any time, however, and sellers are having no trouble in getting $45 for delivery over the first half of next year, and $45.50 to $46 for delivery over the last half. Ferrosilicon is bringing from $62 to $63.

Bars.—Railroad companies are making contracts for their bar iron requirements covering deliveries running over the first quarter of next year. Manufacturing consumers of bar iron, whose requisitions have for a considerable time fallen much under the average, are also increasing their consumption in a most gratifying manner. Although the Eastern bar iron mills are deriving considerable benefit from the sold-up condition of the steel mills, they are not yet seriously crowded but can take more business comfortably. The leading mills quote 1.70c. to 1.75c., tidewater, on best refined and test bars, while others quote 1.65c., to 1.70c., tidewater, according to the character of the order. Steel bars are quoted at 1.66c. to 1.71c., tidewater.

Cast Iron Pipe.—While contracts for next year, for both water and gas pipe, continue to be placed, the market is not quite so active as reported last week. The demand for small lots for fall delivery keeps up remarkably well as a result of the favorable weather. Carload lots of 6-in. are held at $26 per net ton, tidewater.

Old Material.—The steel works and rolling mills are quite well supplied with stocks of old material and are buying sparingly from dealers. As the latter secured very little of the offerings in railroad lists this month, it is assumed that the large consumers made direct bids for the material thus offered and paid somewhat higher prices than the dealers were willing to give. The general market is therefore quiet, with the exception of cast scrap, for which a continued excellent demand is experienced. While it is likely that quotations on some classes of scrap can be shaded, the market generally is firm and dealers are not pressing sales. They rely on the heavy consumption of new products to bring about an improvement in trade conditions in old material in the near future. Quotations are as follows per gross ton, New York and vicinity:

Rerolling rails	$16.00 to $16.50
Old girder and T rails for melting	15.00 to 15.50
Heavy melting steel scrap	15.00 to 15.50
Relaying rails	22.00 to 22.50
Standard hammered iron car axles	24.50 to 25.00
Old steel car axles	21.50 to 22.00
No. 1 railroad wrought	18.00 to 18.50
Wrought iron track scrap	16.00 to 16.50
No. 1 yard wrought, long	16.00 to 16.50
No. 1 yard wrought, short	15.50 to 16.00
Light iron	10.50 to 11.00
Cast borings	10.50 to 11.00
Wrought turnings	12.00 to 12.50
Wrought pipe	14.00 to 14.50
Old car wheels	15.50 to 16.00
No. 1 heavy cast, broken up	15.50 to 16.00
Stove plate	13.00 to 13.50
Locomotive grate bars	12.50 to 13.00
Malleable cast	16.50 to 17.00

Cultivating Trade with Advertisers.—Benjamin P. Forbes, 409 Superior avenue, N. W., Cleveland, Ohio, writes an interesting account of a recent effort he made to increase his trade. He is the manufacturer of Glasbrite, which is a special preparation for cleaning the windows of factories, foundries, shops and grinding rooms, as it removes all the grease and muck and leaves a hard, shiny surface to which dirt does not readily adhere. This preparation is regularly advertised in our columns. Conceiving the idea that he would try to increase his trade with other advertisers in *The Iron Age*, Mr. Forbes wrote to each of them a letter calling attention to his preparation and making a trial offer. Within three days after the last of his letters was mailed he had received 45 replies, of which 22 were orders. The trial offer made was to send a regular full-sized 10-lb. pail for $1, which ordinarily sells for $2.50. It is stated that one pail will clean 30,000 sq. ft. of factory windows. Mr. Forbes says that the American Locomotive Company, Gould Coupler Company, Peerless Motor Company, C. O. Bartlett & Son Company, Whitin Machine Works, American Can Company, Warner & Swasey Company, American Steel & Wire Company and many other manufacturers use it in large quantities.

The abrogation of commercial agreements between the United States and France is the subject matter of Tariff Series No. 6 D, issued by the Bureau of Manufactures of the Department of Commerce and Labor, Washington, D. C. It supplies information regarding the specific articles affected by the termination October 31 of the commercial agreements which up to that time were in force between the United States and France. The articles here enumerated do not comprise any iron and steel manufactures or machinery. Our readers will be interested in knowing this to be the case.

The third annual convention of the National Society for the Promotion of Industrial Education will be held at Milwaukee, Wis., December 2 to 4. The general meetings of the society will be held in the New Auditorium. The headquarters will be at the Hotel Pfister, Wisconsin and Jefferson streets. The office of the society is at 20 West Forty-fourth street, New York. The president is Alexander C. Humphreys, president Stevens Institute of Technology; treasurer, Frederic B. Pratt, Pratt Institute, Brooklyn, N. Y. Of the Milwaukee committee on convention, Frederick W. Sivyer is general chairman and F. A. Cannon, general secretary.

The Isabella-Connellsville Coke Company, which is erecting a new plant in Luzerne Township, Fayette County, Pa., is awarding additional contracts for equipment through Geo. S. Baton & Co., Pittsburgh, the engineers. The Geary Boiler Company, Oil City, Pa., will supply the boilers; the Connellsville Mfg. & Mine Supply Company, Connellsville, Pa., the ventilator fan, and the Westinghouse Electric & Mfg. Company the dynamos and electrical equipment.

The Westinghouse Machine Company has received an order for three turbine equipments, one of 1000 and two of 1500 kw. capacity for the navy yards at League Island, Philadelphia, Brooklyn and Charlestown. This is in the nature of repeat orders for turbine equipment amounting to 5000 kw. placed by the Government for navy yard service about a year ago. As a result of large contracts received during the last few weeks, the Westinghouse working force at East Pittsburgh, Pa., is being increased by about 500 men each month.

Reports that the National Tube Company will build large additions to its Lorain Works, at Lorain, Ohio, are untrue. The company is now installing a new skelp mill and two more butt weld furnaces in its Lorain Works, but other than these additions no new work is under way or contemplated at this plant further than installations that are made from time to time to replace antiquated or wornout machinery.

The monthly meeting of the Engineers' Society of Western Pennsylvania was held in the Fulton Building, Pittsburgh, on the evening of November 16. The paper of the evening was entitled "Deformed Bars vs. Round Rods Anchored for Reinforced Concrete," by J. H. Toupet, chief engineer of the Cummings Structural Concrete Company, Pittsburgh.

J. S. Kelley, a local electrician at Frankfort, Ind., brought suit for an injunction against the city to restrain it from selling electric light bulbs. The court in overruling the city's demurrer said that if a city had a right to sell electric light bulbs it had a right to sell gas stoves and gas fixtures. The court also ruled that the city had no right to use tax money in buying bulbs.

The Dunbar Furnace Company, Dunbar, Pa., has recently purchased from the Mesta Machine Company a vertical high pressure 500,000-lb. blowing engine, and is in the market for a 35-hp. electric hoist for its No. 2 coal mine.

The Pittsburgh Forge & Iron Company is building an addition to its plant on the Northside, Pittsburgh. The hammer shop and additional heating furnaces will be located in the new building, and some new equipment will be installed.

A New $3,000,000 Wire Plant Near Ensley, Alabama.

Announcement is made of the completion of plans under way for some time for the building of a rod mill and connected wire drawing and wire nail mills by the American Steel & Wire Company in the Birmingham, Ala., District. These plans are in line with the intention to diversify the finished products manufactured from open hearth steel produced at the Ensley Works of the Tennessee Coal, Iron & Railroad Company. The capacity of the new wire plant will be 400 tons of finished product a day, and the expenditure involved in its construction is about $3,000,000. Work will begin on the buildings in the near future. The site is about a mile from the Ensley open hearth works, and between Ensley and Wylam, where the new by-product coke ovens heretofore referred to are to be located.

The foreign trade is expected to be one of the important outlets for the products of the new plant.

The International Harvester Company.

The Boston *News Bureau* prints an exceedingly interesting article regarding the International Harvester Company, from which the following extracts are taken:

If ever there was a beneficent trust, if ever there was a concern doing business at the smallest margin of profit consistent with solvency, if ever there was an industrial concern having a practical monopoly in its field of business and yet regarding its customers first, its employees next and its stockholders last, that concern is the International Harvester Company.

When it was put together it was the apparent policy of the managers not to raise the prices from the unprofitable basis previously existing, but to make future dividends out of increased economies, the expansion of the business and the injection of more capital, so that the business might be done straight through from ore lands and timber lands to finished product and stored in warehouse for harvest time and then sold upon credit.

Its gross business is now approaching $80,000,000 per annum. In the season of 1907 it was $78,000,000; last year it dropped to $72,500,000, and now is increasing at the rate of about 10 per cent. per annum. Operating ratio is practically the same, which means that it is probably making $1,000,000 more this year than last year. In the organization of this company $60,000,000, or one-half of the capital, was paid in in cash and then, when the property was appraised and found to have $7,000,000 more assets than capital, the surplus was promptly charged off and the accumulation of a new one out of earnings was begun. This new surplus now amounts to $16,700,000.

Meanwhile, without reducing the original working capital provided at the organization, the company has spent $19,000,000 in capital outlay for new property. This of course came from the surplus and some borrowed money.

The strength of the International Harvester as an investment proposition lies in the narrow margin of profit upon which the business is conducted, the fact that it is getting its own timber and making its own steel, even to mining its own ore, is doing a tremendous export business, with no need of any tariff protection, and does a world wide business based entirely upon agriculture. The wheat harvest may fail in one country, but it is not likely to fail in all countries at the same time. In fact, wheat lands belt the world and the International Harvester follows the wheat lands of the earth.

It is certainly the one big corporation about which the investing public or the general public knows the least. It has no publicity department and no speech-making officials. Its factories are scattered in 15 cities and seldom, if ever, get into the limelight. It cares nothing for the towns and cities, because it has nothing to sell to them. It doesn't sell New York or Boston 50 cents' worth in a year.

Every dollar of the Harvester Company's money comes from the farmers, not from the people of the cities. And so it has come about that we city dwellers know little or nothing about this farmers' supply company, and may come and go in our streets for years without once seeing any of its products.

The truth is that this company is in a class by itself. It has no competitors that are knee high, either in the United States or in any other country, with the possible exception of the Massey-Harris Company of Toronto, which halves the trade of Canada with the International Harvester Company, and is making a strong fight for Australia.

With its 25,000 employees and 42,000 agents, the Harvester Company is a 67,000 man power corporation. It is supporting as many families as there are in the States of Utah or Montana.

Concentrate all its factories in one place and a square mile of land would be too small to hold them Concentrate its ore lands and timber lands and coal lands in one place, and there would be a domain of very nearly 200 square miles—as great an area as that which is covered by the city of Chicago.

At its hundred warehouses there is trackage for 12,000 freight cars, and around its workshops are six busy little railroads of its own, whose engines pull out about 65,000 loaded cars a year, packed with machinery for the farmers of the world.

As an average year's work this company manufactures 700,000 machines of 37 varieties, for which the farmers pay about $73,000,000. Self-binders for the reaping of the wheat, corn binders, mowers, tedders, manure spreaders, gasoline engines, cream separators, hay rakes, binding twine and a sort of auto-buggy which might appropriately be called a far-mobile—such are the articles which this company has for sale, and which go far to explain the enormous crops of American farmers.

American harvesters enter free of charge into Great Britain, Holland, Brazil, Norway, Servia and South Germany. Hungary has levied a toll of $25 per harvester. France takes $20. And Australia has recently put up a tariff wall against our farm machinery. But these obstacles the International Harvester Company is overcoming by building factories in high tariff countries. It already has two of these in operation, in Canada and Sweden.

The Harvester Company has its troubles, of course. It has been baited by the politicians of Arkansas, Texas and Kansas. It has been investigated and pawed over by a heterogeneous assortment of attorneys-general. But in the main it has won to an unusual degree the confidence of the farmers.

The American Iron & Steel Mfg. Company, Lebanon, Pa., is arranging to instal an electric furnace for the manufacture of steel billets for its own use. These billets will not be placed on the market either as billets or as merchant bars. The contemplated output is from 50,000 to 60,000 tons per year. In addition to merchant bars, this company manufactures bolts, nuts, rivets, &c. It has recently enlarged its output of merchant bar iron by installing a tandem train consisting of 18 and 12 in. rolls.

The Eastern Steel Company, Pottsville, Pa., has decided to erect two additional basic open hearth furnaces, together with the necessary operating equipment, the estimated cost of which is $300,000. Each furnace will be of 80 tons capacity. This company is also preparing to equip its plant to roll 24-in. beams. During October its ingot production was 14,000 tons, while 12,000 tons of shapes were shipped. On the completion of the new additions, which is expected to be about March 1, the ingot capacity of the plant will be 24,000 tons monthly.

The Phœnix Iron Company, Phœnixville, Pa., recently added to its steel plant a 100-ton open hearth furnace, which is making an output of 1100 tons a week.

The Machinery Trade.

NEW YORK, November 17, 1909.

The number of machinery manufacturers in New York the past week visiting the local trade, and the shopping around by intending buyers made the stores and offices of machinery merchants look once more like the busy times before the recent depression. Houses appear to be very busy with customers and, in addition, large numbers of inquiries and orders are coming in by mail. While these are principally for small lots, the aggregate is of such size as to indicate a tendency on the part of practically all users of machine tools to increase their output by the installation of additional equipment. Inquiries covering extensive lists of tools are few, and there is one before the trade for a complete equipment for an automobile plant projected at Plainfield, N. J. Aside from this no new projects are reported that will necessitate the purchase of large quantities of machinery. The buying seems to be of machines to be installed in works now in operation rather than for new plants. More talk is heard in the trade concerning changes in prices, which is only natural, in view of extended deliveries, increased demand and rise in price of raw material. Visitors from other parts of the country say that the demand for their products is very good.

The inability of builders of some classes of machine tools to make deliveries as early as their customers desire has advanced prices on second-hand machine tools to a point where they are costing more than they ever have before in the history of the trade. In some makes of lathes, planers and milling machines especially, a first-class second-hand machine can hardly be obtained for less than at least three-quarters the price of a new machine of the same make. Many people who find themselves in need of machine tools to get out urgent orders, have come into the market for second-hand tools and most of them are considering deliveries rather than the cost of the equipment. This does not mean that sellers of second-hand machine tools are demanding more than ordinary profits, as they find it hard to get equipment. Every firm that has a plant of any size is now well filled up with orders and in consequence is using all of its old equipment. Machinery that would in ordinary circumstances go into the scrap heap or fall into the hands of second-hand dealers is being patched up and utilized. This condition is, of course, a direct result of the heavy demand for some classes of machine tools and certain makes of milling machines, shapers, planers and lathes are now unable to promise deliveries on special types of machines under five months.

Machinery Requirements of New Automobile Plant.

The trade has submitted bids in the past few days on an extensive list of machine tools issued by the Quincy-Manchester-Sargent Company, Plainfield, N. J. It is understood that the list is only a tentative one, and that it is likely that purchases will not be made for some time. While nothing definite seems to be known in the trade as to what these tools are to be used for, it is the general understanding that the Quincy-Manchester-Sargent Company intends to install a complete automobile building plant to be operated in conjunction with its present works. About all the important machinery merchants in the city submitted bids on part of the list, and very few received the complete specifications. For this reason it is hard to estimate the amount of machinery covered, but from what is heard in the trade, the plant will be of fair size and the equipment quite extensive.

The Erie Railroad is arranging to move its Bergen shops, and has prepared plans for the erection of large shops on the Hackensack meadows, near Hackensack, N. J. The buildings, it is understood, will cost about $50,000, and they will be constructed of brick and concrete. They will include a machine shop, blacksmith shop, roundhouse and power house. The machinery now in the Bergen shops will be moved into the new plant, but it is understood in the trade that considerable extra machinery will be required as the plans show that a much larger repair plant than the present Bergen shops will be erected. F. L. Stuart, who has an office at 50 Church street, New York, is the chief engineer and is in charge of the general arrangements, while F. B. Howard, engineer of bridges and buildings for the company, will handle the details regarding the erection of the plant.

The Pennsylvania Railroad has under consideration the construction of new shops at Terre Haute, Ind., but nothing definite regarding the improvement has as yet been decided upon. Current reports indicate that the project will be one of considerable size.

The Breeze Carbureter Company, 276 Halsey street, Newark, N. J., intends to purchase about $12,000 worth of new machinery for its new plant, the specifications for which are prepared, and bids are being received by F. H. Ogden, of the Ogden Engineering Company, Newark, N. J., who is in charge of the work as engineer and architect. Copies of the specifications for the required machinery can be secured from him. The new machinery to be purchased will include lathes for castings with automatic self-indexing chuck, either separate or together, automatic screw machines, automatic casting machines, a number of multiple spindle drills, 60 hp. engine with automatic cut-off valve and 120 hp. boiler and generator with switch board for about 150 lights. The company is also interested in machinery for working brass, including power press. The company has contracted for such a large amount of business, that notwithstanding that its factory was reorganized last May, it is compelled to have additional space to supply the demand. The new building will be 86 x 120 ft., one story, of reinforced concrete with ornamental brick facings and will be as near fireproof as it can be made. The buildings will have abundant light and a complete telephone system connecting all departments will be installed. Double deck benches will be equipped with drawers and tools. High and low pressure air exhaust system for the buffing and grinding room will be installed, and no expense within reason will be spared to make the plant one of the best in the country for the manufacture of carbureters, strainers and check valves. In the shop will be three main lines of shafting running the full length, the middle shaft to be operated direct from the engine, the other two belted from the middle. In the near future the company expects to change over to electrically driven shafts. Thomas H. McNevin is president, and Colman S. O'Loughlin secretary and treasurer.

The American Smelting & Refining Company, 165 Broadway, New York, is making inquiries in the trade for considerable equipment to be added to its various plants. These inquiries cover a general line of machinery, and some of the largest requirements are for ore handling and conveying machinery and power equipment.

Harmon Hershey, Owego, N. Y., who is purchasing agent for the Owego Bridge Company, and was formerly with the Canton Bridge Company, of Canton, Ohio, has incorporated the Rochester Structural Steel Company to fabricate structural steel for buildings and bridges. The company has purchased a site at Rochester where it will erect a plant to be operated by electricity. A large punch, hoists, saw and other equipment for the plant will be purchased as soon as is possible. The officers have not yet been chosen, but Mr. Hershey will be president and treasurer. His address will be Owego for about 30 days.

The General Chemical Company, Shadyside, N. J., has inquiries out in the trade for equipment to be installed in an extensive addition the company is making to its plant there, and the machinery requirements are quite large. They include power equipment and considerable conveying machinery besides some special machinery which the company uses in making its chemical products.

It is understood that the plant to be erected at Passaic, N. J., by the R & J. Dick Company, of Glasgow, Scotland, will consist of a main building, 200 x 250 ft., power house, 50 x 90 ft., and other smaller buildings. Work has begun on the foundations and it is expected that the plant will be ready for operation the early part of next year.

The Jamison Coal & Coke Company, Pittsburgh, will shortly take bids on air compressors for its new plant at Banackville, W. Va. The contract for the tipple has already been let.

The new girder shop of the Virginia Bridge & Iron Company, Roanoke, Va., will be 80 x 400 ft., marking shop 90 x 120 ft., and new equipment has been specified as follows: Multiple punches, plate punches and straightening rolls, Hilles & Jones Company, Wilmington, Del. and Williams, White & Co., Moline, Ill.; five traveling cranes, Niles-Bement-Pond Company, Philadelphia, Pa. and Case Crane Company, Columbus, Ohio; two 1500 ft. direct driven compound air compressors, Ingersoll-Rand Company, New York; generators, Westinghouse Electric & Mfg. Company, Pittsburgh, Pa.; locomotive crane, Browning Hoisting Machinery Company, Cleveland, Ohio; lathes, Carey Machinery & Supply Company, Baltimore, Md.; angle shears, Long & Allstatter, Hamilton, Ohio; beam shears, Henry Pels & Co., New York; rivet making machinery, Acme Machinery Company, Cleveland, Ohio. This equipment is expected to be installed by the end of December or early in January, after which the Roanoke plant will have a capacity of 5000 tons of manufactured product per month, or 60,000 tons per annum. The Memphis, Tenn. plant of this company is nearly completed, and is producing about 1000 tons of manufactured product per month, at present.

The North Carolina Electrical Power Company, of which W. T. Weaver, of Asheville, N. C., is president, will construct a hydro-electric plant on the French Broad River, near Marshall, N. C., which will include a dam 500 ft. long and 30 ft. high, 18,000 cu. yd. of concrete, and a stone power house. Two 2200 hp. generators operated by vertical turbines developing about 4600 hp. will be installed. High power transmission lines will be extended to the company's Ivy plant, five miles distant, and from there will be lines extending to the original W. T. Weaver plant, five miles

from Asheville. Charles E. Waddell, of Biltmore, N. C., is the engineer in charge.

The City Clerk, of Hull, Que., will receive bids until Dec. 6, for a set of duplex or triplex pumps with a daily capacity of 6,000,000 gal., with turbine wheels to operate the pumps.

Power machinery and some additional tools will be required after Jan. 1, by the United States Headlight Company, Buffalo, N. Y., for an extension of its plant.

State Superintendent of Public Works, F. C. Stevens, will open bids Dec. 1, for five new barge canal contracts involving an expenditure of $2,387,316. The contracts to be awarded and the estimate of the State engineer are as follows: Dredging a channel in the Hudson in the canal outlet, $439,933; construction of lock at Fort Edward, $232,908; constructing lock in Hudson River below Mechanicville, $270,675; completing two locks in Waterford, $372,000; providing winches or movable dams on the canal, $72,000.

The Board of Water Supply, New York, will receive bids until Nov. 24, for contract No. 10 for the construction of the head works of the Catskill aqueduct, including the structures for controlling, regulating and aerating the water leaving the Ashokan reservoirs, the principal of which are a lower gate chamber, a screen chamber and aerator, special and standard aqueducts in open cut, waste weirs, waste channel, concrete venturi meter and other appurtenances. The work is located near Brown's Station, in Olive, Ulster county.

Work was begun Saturday afternoon on the construction of the Fourth avenue subway in Brooklyn. The subway work is divided into six sections, contracts for which have been signed as follows: Section 1, Nassau street to Willoughby street, James P. Graham, Bensonhurst, L. I., $1,020,476, pipe galleries, $101,374; section 2, Willoughby street to Ashland place, William Bradley, New York, $3,436,019; pipe galleries, $58,695; section 3, Ashland place to Sackett street, William Bradley, New York, $3,392,091, pipe galleries, $208,135; section 4, Sackett street to Tenth street, E. E. Smith Contracting Company, Philadelphia, Pa., $2,283,553, pipe galleries, $206,672; section 5, Tenth street to Twenty-seventh street, Tide Water Building Company and Thomas B. Bryson, New York, $1,945,640, pipe galleries, $251,076; section 6, Twenty-seventh street to Forty-third street, E. E. Smith Contracting Company, Philadelphia, Pa., $2,808,982, pipe galleries, $173,665.

Business Changes.

The New York office of the De Forge Belting Company, of Newark, N. J., has been moved from 88 Reade street to 88 Warren street.

New England Machinery Market.

BOSTON, MASS., November 16, 1909.

A steady improvement in conditions as they affect the New England dealers continues to assert itself. The demand is still somewhat "spotty," but less so each week. Purchases come from an increasing variety of industries. Not a great many really large orders are reported, but plenty of them are of fair size. Certain tools are not moving as rapidly as others. Radial drills are in small demand. Neither are the very heavy lathes selling in satisfactory numbers. But the totals of each week, taking the aggregate of the dealers, are increasing, slowly, but satisfactorily. Deliveries of those machines which are in heavy demand by the automobile builders are steadily receding into the future. One reason for this is that some other users are buying in anticipation of their future wants, in the realization that later on it will be impossible to meet their requirements.

The supply trade is improving to about the same extent as machine tools. Prices are stiffening, but there remains much to be accomplished before they are where they were before the slump of 1907. Scarcity of business led to rigorous competition, which in contrast to machinery sent prices to a very low level. There has now been some improvement in this respect, but it has not been universal. Apparently the order books of some manufacturers have not yet reached the point where they wish to adopt and insist upon the old lists. It is stated that certain semifinished products have sold recently at prices below the unfinished. Very advantageous prices for some lines have been offered dealers if they would make contracts covering say, six months, with a limit on amount corresponding to probable wants. These conditions are changing, however, and it is expected that lists will be advanced and strictly held to in the near future. Buyers are taking advantage of present opportunities, which in itself is having a strong tendency toward improving the market.

The movement for a better agreement in the woodworking machinery business is progressing well as a result of the recent meeting of the American Association of Manufacturers of Woodworking Machinery. It was voted to adopt a system of interchange of price lists, which is one of the most important steps toward the maintenance of prices, and to a general advance. Where there is a lack of understanding in a trade an unnecessarily severe competition exists, and a strong effort is being made to eradicate this condition. The feeling is that the woodworking machinery people are not receiving the prices to which they are entitled. Theirs is a rich clientage, but, unlike the machine tool business, their customers have little knowledge of mechanical things, which is held to be in itself a strong reason for active co-operation. Another meeting of the association will be held in Chicago in December, when the matter will be further discussed, with the purpose of framing some method of interchange of ideas similar to that of the National Machine Tool Builders' Association, which has worked out to the advantage of that trade in an eminent degree.

Prices of woodworking machinery are advancing. The S. A. Woods Machine Company, Boston, planer specialist, has already made two increases and proposes to announce another soon. The company is rushed with orders, the recent improvement in its business having been very great.

The Wyman & Gordon Company, Worcester, Mass., manufacturer of drop forgings, has extended its building plans and will add immediately a large amount of manufacturing space. A two-story building, 40 x 124 ft., will be devoted to machine shop. A new forge shop will be about 80 x 120 ft., one story, and there will be another building, 30 x 280 ft., devoted to die and steel storage. A large part of the equipment has been purchased, but the company is buying new machine tools at frequent intervals. The works of the company, at Cleveland, Ohio, are being increased by the addition of new equipment. The works are running on a 24-hour schedule, largely on automobile work, which has been made a specialty. A much larger amount of general forge work is being offered than formerly.

The Baldwin Chain & Cycle Mfg. Company, Worcester, Mass., manufacturer of chains and steering gears, is erecting an addition to its works, 63 x 83 ft., two stories. The company is adding new equipment and has not yet placed the orders for a considerable part of it, consisting mostly of presses.

The Mallory Wheeler Company, New Haven, Conn., manufacturer of padlocks, is enlarging its works, the improvements including the erection of new kilns.

The Scoville Mfg. Company, Waterbury, Conn., manufacturer of brass and brass goods, is erecting an addition to its power plant, which will be given up entirely to electrical equipment. The company is preparing to erect a new manufacturing building, but the size is not definitely determined.

It is given out in Connecticut that the New York, New Haven & Hartford Railroad will expend $3,000,000 in electrifying the New England Railroad, connecting Hartford and Waterbury. A part of the work of double tracking the line has been completed, but a large portion of the Hartford end remains to be done.

The Connecticut Metal Boiler Cleaner Company, New Haven, Conn., has increased its capital stock from $10,000 to $25,000, the purpose being to extend the field of its operations to cover all of New England. This company originally held the rights to the cleaner for Connecticut only, and now the remainder of this territory has been negotiated for. Offices will be opened in the other States. Herbert Smith is president of the company; Frederick H. Loomis, treasurer, and Friend A. Ives, secretary.

The Central Falls Stone Company, Fales and Fletcher streets, Central Falls, R. I., will be in the market for improved quarrying equipment. The company has just incorporated with a Rhode Island charter and $50,000 authorized capital. The organizers are Augustus Pigeon, Frederick A. Pigeon and Frank M. Penton St. Germain, all of Central Falls.

Announcements of industrial extensions outside of the metal trades include the following: Hartford Carpet Corporation, Thompsonville, Conn., mill 110 x 385 ft., four stories; Brockton Ideal Shoe Company, Brockton, Mass., additional story to factory just purchased; Russell Mfg. Company, textiles, Middletown, Conn., factory building, 60 x 185 ft., three stories; J. T. Hopkins & Sons, Salem, Mass., addition to shoe factory, 40 x 60 ft., two stories; Board of Trade of Saco, Maine, raising $25,000, which will be used for new building, to be occupied as a shoe factory; Lewis Mfg. Company, Walpole, Mass., two-story building, 60 x 130 ft.

The Norton Grinding Company, Worcester, Mass., has added to its line a 10 x 36 in. cylindrical grinding machine similar in details of construction and mechanism to the 6 x 32 in machine described in detail in *The Iron Age* of July 18, 1907.

The Boston Electric Show opened in Mechanics' Building yesterday, with a wide variety of displays, some of them of interest to the metal working industries.

The Vulcan Iron Works, New Britain, Conn., manufacturer of malleable iron castings, will build a new foundry, 110 x 205 ft., one story, with saw tooth steel truss roofing,

the structure to be entirely of brick and steel. Another large air furnace will be erected in the building. The company expects to put up some other additions later, but has not yet decided upon dimensions and other details.

Interests closely identified with the Cape Ann Tool Company, Pigeon Cove, Mass., have organized the Dean Forging Company, Muncie, Ind., and will establish works in that city. J. J. Dean is president and treasurer and Wilbur A. Full secretary. The new company will manufacture drop forgings, the line being the same as that of the Cape Ann Tool Company.

The Stanley Rule & Level Company, New Britain, Conn., has voted to increase its capital stock from $1,000,000 to $2,000,000.

The new building of the Hydrocarbon Converter Company, New London, Conn., will be 20 x 60 ft., and will be used as an assembling room.

Philadelphia Machinery Market.

PHILADELPHIA, PA., November 15, 1909.

Taken as a whole, the local machinery market might be considered to be a trifle better. Considerable irregularity in buying is, however, still to be noted and unchanged conditions are reported by quite a number of the local merchants. Inquiries come out quite freely, but are mostly of small size. A large volume of business is pending, but prospective purchasers do not seem in any particular haste to close contracts, particularly when their requirements are of any size; while current business is not up to the usual standard, the fact that there is a considerable volume under negotiation, and more in sight, encourages the trade in the view that better conditions will develop in the future. Day to day buyers are shopping around somewhat more extensively, due, no doubt, to the steadily hardening deliveries in some lines of tools, and, as the general run of buyers of that class usually defer purchases until almost the last moment, and then must have prompt shipment, the advantage is frequently with the seller who can make such delivery. Machine tool builders continue to book a very fair run of business, the most interesting transactions in the way of heavy and special tools recently being the requirements of the Bethlehem Steel Company, against which some very satisfactory orders for tools of that class have been placed with several local builders. Makers of the standard types of machine tools continue fairly active, although individual orders are usually of small size. Small tool builders, particularly those making equipment of a somewhat special character, are very fully employed and report an active demand. Railroad buying is still at a low point, although a betterment is looked forward to in that direction. Industrial plants, particularly those making finished and semi-finished iron and steel products, are operating at record capacities, and as their product is being steadily consumed the trade reasons that, with those conditions steadily improving, the tool trade must eventually feel the effects of the general betterment of the situation.

There has been no important demand for tools or machinery for export. This branch of the trade remains quiet, and the local tool builders, except in special instances, show but little interest in the foreign demand.

A little better movement in second-hand machine tools is noted, due to the increasing inability in some cases to get new tools for reasonably early delivery. Purchases have not been large, transactions being largely of a day to day character. Second-hand engines still drag, there being apparently but few buyers for equipment of that class. Second-hand boilers, particularly those of the medium horse-powers, continue fairly active. Builders of new power equipment are actively engaged, with a good volume of business under negotiation. Several orders for small and moderate size engines are reported; this branch of the trade shows a shade more activity.

The foundry trade is somewhat more actively engaged; a good volume of business is coming to steel casting plants and efforts continue on the part of a number to realize higher prices for their products. The gray iron foundry trade is on a shade better basis; tonnages coming out are of better size, both in the way of machinery as well as general castings, although the majority of foundrymen find it rather difficult to get advanced prices for work of a general nature.

The Lukins Engineering Company, Camden, N. J., recently incorporated, will transact a general designing, engineering, contracting and constructing business. The incorporators are V. A. Murray, H. G. Elliot and A. Martin.

The budget of the Bureau of Surveys, city of Philadelphia, for the year 1910, has been approved. The amount asked for totals nearly $2,000,000, of which half a million dollars in each case is to be applied to new sewer construction and to new bridges. For improvements along the Delaware River front $250,000 is apportioned.

J. W. Ackerman, superintendent of the Board of Water Supply, Auburn, N. J., has plans in hand for a filtration plant, reservoir and alterations to the municipal pumping plant, the aggregate cost of which is estimated to be close to $170,000.

Thomas Potters' Sons & Co., oil cloth manufacturers, Second street and Erie avenue, have purchased a tract of land, containing over nine and one-half acres, adjoining the present plant. Plans for an additional manufacturing building, to be erected on a portion of the ground, will be made in the near future.

The Royersford Foundry & Machine Company, Royersford, Pa., notes an increased demand for its line of punch and shearing machinery. Inquiries are more numerous and a number of orders have been booked. Four heavy punch and shearing machines have been shipped recently to purchasers in the West, while another has been furnished a New York customer. In its power transmission department a decidedly increased volume of business is being transacted.

The E. H. Mumford Company, manufacturer of foundry molding machines, reports the month of October as the best, in volume of business taken, in its history, and orders taken so far in the present month show a proportionate further increase. The demand has been largely for machines of the jolt ramming type, although there has been considerable business closed for ordinary squeezer types of machines.

The Standard Pressed Steel Company continues busy in every department. A materially larger volume of business has been done in Hallowell pressed steel countershaft hangers, while the demand for the regular line of pressed steel hangers continues to improve. The foreign demand has not been so heavy, although good shipments have been made to Switzerland, Germany, Austria and Australia. Full time is being made in every department of the company's plant.

The Wetherill Brothers' Machine Company, Chester, Pa., has orders in hand covering machinery for an 18-in. hydraulic dredge for shipment to Panama, and has closed a contract with the Atlantic Dredging Company, Philadelphia, for an 18-in. hydraulic dredging pump and agitating machinery having a capacity of 5000 cu. yd. per 10 hours. The company is not only busy, but expects an improved demand for dredging machinery of various types.

Chicago Machinery Market.

CHICAGO, ILL., November 16, 1909.

Chicago machinery houses report a very satisfactory growth in the volume of new business both in the buying by transient customers who come in person to place orders and in inquiries by mail. At the end of each month this fall the sales have shown a very gratifying increase over the preceding month, and while there are dull spots in the market, there is a tendency each week for new business to broaden out into all lines of machine tools and shop equipment. The natural inference from this condition is that all the industries in the West are sharing in the revival of activity. Another encouraging feature of the situation is that there is no longer any necessity to trade in an old machine for each new one sold, indicating that the new machines are needed for an increase in the shop work of the buyer.

The railroads are slowly awakening to the situation. They have bought comparatively little in the past two years, and many inquiries that came up from time to time resulted in no business because the shop officials of the railroads found they could not get appropriations for the improvements recommended. Recently, however, the railroads have awakened to the fact that their shop facilities are far from adequate to do the work that the revival in traffic has thrown upon them. Old dormant inquiries are revived by wire and urgent requests are made for prompt delivery. In one case an order of this kind was placed by wire and the best delivery that could be obtained was four months for the special machines wanted, the order amounting to $15,000. It is becoming very difficult for the buyer to obtain anything in the market for immediate or prompt shipment, and on some lines of milling machines the factories are booked eight and ten months ahead. In some cases the lathe manufacturers cannot make deliveries inside of two months on the sizes for which there is the greatest demand.

Larger buying by the railroads is looked for as soon as they awaken to the fact that they must anticipate their requirements many months in advance. They as well as other large buyers of machine tools seem to have abandoned for the present the plan of issuing large lists covering their requirements. They are coming in quietly for one or more machines at a time and are adapting themselves to circumstances as far as possible, taking what they can get for early delivery and quietly getting their orders on the books where deliveries cannot be made for several months.

Plans and specifications have been prepared by the Michigan Central Railroad Company for the construction of new car shops and power plant at Bay City, Mich. The new shops will be 80 x 460 ft., and will be used for the heavy repair work which was formerly done in Detroit, thus making Bay City headquarters for the Michigan Central in all of its constructive work in that part of the State. It is estimated that the new plant will cost about $30,000.

The Prest Machine Works Company, Oklahoma City, Okla., which was established about six months ago, has been incorporated with capital stock of $6,000. The company makes a specialty of repairing machinery and grinding and corrugating flour mill rolls.

The Thiery & Kendrick Mfg. Company, Detroit, Mich., is erecting a two-story brick machine shop of modern construction, 50 x 150 ft., and a brick and steel foundry building, 65 x 155 ft. It is the intention of the company to manufacture brass and aluminum castings of every description.

The Clark Steel Roller Truck Company, Dubuque, Ia., has been organized with capital stock of $275,000, to manufacture an improved railroad truck, the invention of A. L. Clark.

The Allis-Chalmers Company, Milwaukee, Wis., is erecting at its No. 2 works, Twelfth street and Washtenaw avenue, Chicago, a new shop, 128 x 200 ft. It is stated that the company will not purchase any new tools for this improvement, but will make a readjustment of the existing equipment.

The Detroit Pressed Steel Company, Detroit, Mich., has broken ground for an all-steel building designed on the unit plan for quick duplication, which will be equipped for the manufacture of auto frames and parts. The company has equipped a machine shop for heavy die cutting and a modern press room.

The Union Steam Pump Company, Battle Creek, Mich., has let contract for the construction of its new two-story brick and steel machine shop, 90 x 320 ft. The company has not yet received bids for the machinery it will purchase for equipping this new shop, but the elevator has been provided for. One or more traveling cranes will likely be required and in addition quite a large line of machine tools will be purchased.

Cleveland Machinery Market.

CLEVELAND, OHIO, November 16, 1909.

Conditions in the local machine tool market continue very satisfactory. While the volume of sales shows no particular increase as compared with the past few weeks, there is a good and steady demand for nearly all kinds of machine tools and the future outlook is regarded as very encouraging. The market has broadened so that orders are now coming from every industry that uses machine tools. Scattering orders for two or three tools continue to come from the automobile trade, and a large share of the orders at present are from makers of automobile parts and industries indirectly connected with the automobile trade. While the direct demand from this trade has fallen off, due to the completion of the purchase of the tool requirements for the coming season, the volume of business from other sources is steadily growing. Large manufacturing plants that have added very little machinery equipment during the past year or two, with their plants running at practically full capacity, now feel the need of additional machinery and are buying more freely. This change in the condition of the market has resulted in an increase in the demand for larger tools, particularly lathes. Until quite recently there have been but few calls for lathes larger than 18 and 20-in. In addition to the good demand for machine tools for enlargement of plants in metal working lines there is a fair volume of business from new concerns that are equipping plants for the manufacture of various metal products. Sales during the week were mostly small lots of tools. A large number of similar sized inquiries are pending, as well as two fairly large ones. Very little business is coming from the railroads.

The demand for second-hand tools continues very active, and as few used tools are being placed on the market the supply is daily growing scarcer.

Local tool builders report a good volume of business, and nearly all are well filled with orders and are running their plants at full capacity. In heavy machinery the demand is steadily improving and a large amount of work is being figured on in handling, steel plant and mining equipment.

The annual meeting and dinner of the Employers' Association of Cleveland will be held at the Chamber of Commerce auditorium Nov. 30. The principal addresses will be made by John Kirby, Jr., president of the National Association of Manufactturers, and Charles Littlefield, formerly Congressman from Maine.

The Burke Machinery Company, maker of milling machines, drill presses, metal saws, &c., is building a new plant in Conneaut, Ohio, and will move from East Thirty-fifth street and Perkins avenue, Cleveland, to Conneaut about Jan. 1. The company is erecting a three-story building, 50 x 155 ft., which will provide twice as much room as contained in the present plant. To further provide for the growth of its business the company has increased its capitalization from $20,000 to $80,000. In addition to its present line it will shortly place on the market a new milling machine, similar to those it now makes, but of a larger size. This company reports that it is now getting all the orders that it can fill.

The Foster Bolt & Nut Mfg. Company, Cleveland, will build a new plant on East Seventy-first street near Union avenue. The company has let a contract to the Republic Structural Iron Works Company for a steel structure, 60 x 100 ft., and will also erect a brick building, 60 x 288 ft. The company was recently organized with a capitalization of $150,000 to take over the plant of the Capital Lock-Nut & Washer Company, of Columbus, Ohio, which was recently sold at public auction to O. E. and A. M. Foster. The equipment will be moved to Cleveland.

The Rauch & Lang Carriage Company, Cleveland, maker of electric automobiles, has plans prepared for further additions to its plant. The company is now building three four-story buildings, each 64 x 112 ft., and will soon begin the erection of another building, two stories, and of the same dimensions as the other structures. With the completion of the additions the capacity of the plant will be doubled. The company has purchased considerable machine tool equipment during the past few weeks, and will purchase some additional machinery. To provide for the operation of its plant at the increased capacity the company has increased its capitalization from $250,000 to $1,000,000.

In response to a demand for a speedy and light weight riveting hammer adapted to driving small rivets in automobile frames the Cleveland Pneumatic Tool Company, Cleveland, Ohio, is placing on the market a new tool, called the Cleveland auto-frame riveter for driving 3/8-in. rivets in automobile frames and other light steel construction where small rivets are used. The hammer weighs but 12 lb. and has a speed of 1,300 strokes per minute. Rivet sets are made to conform to the requirements of the work.

The Burt Mfg. Company, Akron, Ohio, recently purchased the plant of the Burger Iron Company, which it has fitted up for the manufacture of its products. The Burt company reports that the volume of its business continues very heavy, and that 1909 will be the largest year in its history.

The Champion Machine & Forging Company, East Seventy-eighth street, Cleveland, is installing additional machinery equipment and will add drop forgings to its present products of forgings and foundry chaplets.

The Dill-Brandt Mfg. Company, Cleveland, recently formed to manufacture a special numbering machine, has changed its name to the Dill Mfg. Company. The company has established a plant at 5915 Bonna avenue. It expects to add steel stamps to its present products.

The Reliable Machine Company, Cleveland, has been incorporated with a capitalization of $10,000 by James A. Garvey, John W. Garvey, M. F. Ryan, William G. Batchelder and John L. Dowling.

The Three-In-One Heating & Mfg. Company is the name of a new Cleveland concern that has been incorporated with a capitalization of $5000 to manufacture a water tube boiler. James E. Potts and Edward Credicott are the leading promoters of the new company. A manufacturing plant will be established.

The Orr Foundry Company, Orrville, Ohio, and the Service Pump Company, which recently located in that city, and which has just completed a portion of its new plant, have decided to combine their plants. Plans for the erection of additional buildings to make room for the merged concerns are now under consideration.

The Barberton Aviator Company, Barberton, Ohio, has been organized with a capitalization of $10,000 to build an aeroplane. Michael Pardion, the inventor, is the secretary and general manager of the company.

Cincinnati Machinery Market.

CINCINNATI, OHIO, November 16, 1909.

Local machinery houses, particularly those making a specialty of machine tools, report a splendid run of inquiries and increasing sales, for the most part of the higher grade tools. Particularly heavy have been sales to plants making a specialty of repair work on car equipment and to the larger steel manufacturers. All car manufacturing establishments in the Central States are gradually increasing forces and time; some being pressed for deliveries working overtime. Car companies in this district are in receipt of information that the Cincinnati, Hamilton & Dayton Railroad is in the market for both passenger and freight equipment; Detroit, Toledo & Ironton Railroad, 2500 freight cars; Norfolk & Western Railroad, 100 32-ton flat and

200 50-ton box cars; Northern Pacific Railroad, 1500 gondolas, and the Delaware, Lackawanna & Western Railroad, 500 gondolas. In the tool line lathes, milling machines and upright drills continue to lead in output; but the buying by automobile manufacturing concerns has abated considerably. Inquiry from Europe is more encouraging and some fairly good sales have been made for export shipment during the week.

Very encouraging is the report from the jobbing foundries. All are engaged to practically their maximum melting capacity. The larger concerns bought iron at low prices some time ago, so that well filled yards have been the rule, but extraordinary demand for castings from the machine tool builders has depleted stocks of iron in yards until the majority of foundrymen are compelled to come into the market for 1910 requirements.

In second-hand machinery and machine tools the demand is quiet, with light stocks for selection. In the woodworking machinery lines splendid business is reported, particularly from the owners of planing mills. Some of the largest manufactories of woodworking machinery in the world are located here, and if their edict be accepted the business in that branch of the trade is booming.

The new mills of the American Rolling Mill Company, headquarters Middletown, Ohio, will most likely be built in that city. The company, it is understood, is rather committed to the belief that it would be improvident to locate two open hearth plants at widely different points. Besides the city of Middletown has acceded to all the company's requirements or requests and is waging an aggressive campaign to keep the plants in the Middletown group.

The Carroll-Porter Boiler Works, Wellsville, Ohio, has received orders that will keep its forces engaged full time for many months. The shop was closed until a few weeks ago for about a year and a half. In addition to the orders that will keep the plant busy for several months, a contract was taken early in the month involving about $25,000. The managers are contemplating running a night shift. A large contract for water mains to be shipped to Mexico and a contract of a similar character for shipment to Buffalo are on the books.

Matt Miller of Auburn, Ind., has moved his machine shop from East Eleventh street to a location nearer the center of the city.

Eastern capitalists have become interested in the building of a projected interurban line from Findlay to Marion, Ohio, a distance of 47 miles. It is understood that the survey has proved satisfactory and that the work of construction will be started shortly.

The Cincinnati plant of the International Steam Pump Company, known as the Laidlaw, Dunn, Gordon Company, is running full force and on overtime, and anticipates making some additions and improvements soon to take care of increased business. The first addition will probably be a new pattern shop and storage rooms. A considerable amount of new machinery has been installed.

The firm of Rush & Kinney, composed of George Rush and Charles L. Kinney, owner of the Federal Brass Foundry at South Bend, Ind., has been dissolved, Mr. Kinney retiring.

The National Cash Register Company, Dayton, Ohio, with its splendid tool equipment, has undertaken to assist another Dayton concern, recently crippled by fire, by making up such emergency tools as were most urgently needed. The Dayton Computing Scale Company is the concern profiting by the register company's help. The latter has had extra forces working on overtime to get out these models and tools.

Milwaukee Machinery Market.

MILWAUKEE, WIS., November 16, 1909.

Difficulty in obtaining assurances of prompt delivery from machine builders has led to the purchase, throughout this section, of many used tools; and the trade in second-hand lots is quite brisk. Two of the larger shops in this vicinity, which were among the first to order improved equipment for extensions decided upon some months ago, are also taking advantage of the situation by disposing of some of their older tools and ordering more new machines than they had originally intended, as advance deliveries on previous contracts enable them to do this without embarrassment to the work. The net result is to bring various departments of these shops strictly "up to date."

Builders of heavy machinery who make their own forgings are giving considerable attention at present to the question of installing, for future large work, hydraulic forging presses of the construction which has been used in Europe for some years past. Sale of an uncommonly powerful machine of this character is understood to have been made here recently by Niles-Bement-Pond Company, New York, and the United Engineering & Foundry Company, Pittsburgh, is active in bringing its new high-speed press to the attention of Wisconsin manufacturers. Outside of these two concerns no American builders of forging presses of large capacity seem to be known here. For small and medium sized forgings the hammer is still regarded as desirable.

An interesting indication of the phenomenal activity now manifested throughout the United States in electric railroad building, as well as the improvement of existing systems, with consequent demand for machinery, rails and line material, is found in the large aggregate of orders received here within the past two or three months for Christensen compressors and air brake equipments. It is a fact not generally realized elsewhere that from two-thirds to three-quarters of all the electrically operated air brakes used in the world have been manufactured in Milwaukee; and this city, with two large plants devoted to that specialty, is still the leading center of production of the type named, as Pittsburgh is for the brakes used on steam roads.

Concerted action on the part of fire insurance companies towards securing better protection for large industrial plants, office buildings, hotels, &c., is leading to a strong demand for underwriters' pumps, both of the direct-acting steam pattern and the motor-driven centrifugal type. A number of concerns here either manufacture or handle these pumps, and inquiries for them are increasing steadily.

Sales of sheet metal, plain, corrugated and galvanized, as well as hot or cold pressed into a great variety of special shapes, are reaching a volume that is unprecedented here, and metal stampings are being ordered in large quantities. Some shops have in hand contracts for several months ahead. During the coming year industrial districts of Wisconsin and adjacent States will offer a good market for presses, die cutters and apparatus of all kinds used in this work. Perforated metal is also wanted more largely than in the past, and for many purposes it is displacing wire screens.

A feature of the foundry trade is the demand for manganese steel castings, which, according to the representative of a large machine house, are likely to be used to a greater extent in future than ever before for parts subjected to excessive wear. All grades of metal castings are, however, needed in sufficient quantities to tax the resources of local plants.

The municipal power plant at Reedsburg, Wis., will be equipped with new machinery as soon as bonds recently voted for the improvement have been disposed of.

The Consolidated Sheet Metal Company, Milwaukee, will put up a new fabricating plant.

A modern power plant has been decided upon by the Keil Furniture Company, Milwaukee, in connection with a factory, recently purchased, which it will remodel.

The Great Northern Construction Company has taken contract to erect a machine shop for Wm. R. Follmer, Milwaukee.

The Milwaukee Machine Tool Company has under consideration the building of a new plant if a suitable site can be secured.

A plant for the building of automobiles will be erected by Fred E. Schueler & Bro., Milwaukee, as an addition to their vehicle factory. The initial expenditure has been fixed at $30,000. For details of equipment, which have not yet been fully worked out, address them directly.

The Albrecht Mfg. Company, Kewaunee, Wis., has in contemplation the erection next year of a new factory building and the remodeling of its power system.

The Wisconsin Engine Company has taken contracts for a Corliss engine, with electric generator direct-connected, to be installed in the municipal power and lighting plant at Hawkinsville, Ga., and for a 12,000,000-gal. pumping engine for the city water works at Perth Amboy, N. J.

Apparatus for a new substation in which to receive and convert electric current transmitted from the power plant at Ashland has been purchased by the Washburn (Wis.) Electric Light & Power Company.

An addition to the shops of the Geo. Gorton Machine Company, Racine, Wis., will considerably extend its facilities and lend to the purchase of special equipment.

Some new machinery, including possibly boiler and tanks, will be needed before long by the Rhinelander (Wis.) Paper Company.

An incineration plant, similar to the one being built at Milwaukee, is under consideration at Racine, Wis.

Extension of its system of motor-drive is said to be contemplated by the Foster-Latimer Lumber Company, Mullen, Wis., and some mill machinery may be purchased within the next few months.

A new plant, 75 x 200 ft., three stories, is to be built for the Steinberg Piano Company, Eau Claire, Wis., with engine and generator in the basement. No details of equipment have as yet been worked out.

The Kaukauna Gas & Electric Light & Power Company will make a strong effort this winter to increase its day load, by making contracts for electric power with plants of various kinds in or near Kaukauna, Wis. As far as this movement is successful it will create considerable demand for motors and motor-driven machinery.

A new factory, with power and woodworking apparatus, will be built at La Crosse, Wis., by Egid Hackner.

The Beaver Dam Malleable Iron Company, Beaver Dam, Wis., whose contemplated extensions were recently referred to in this report, has decided upon two entirely new buildings, each about 150 x 320 ft., which are expected to be completed and fully equipped soon after the first of the year. For machinery details address D. P. Lamoreaux, president.

Power generated at Grand Rapids, Wis., will be transmitted to Menominee, Mich., where the Menominee & Marinette Light & Traction Company is building a transformer and converter station to take the current at high potential and change it to commercial voltage. Most of the equipment, up to 5000 kw., has already been provided for.

The Wrought Washer Mfg. Company, Milwaukee, whose contemplated additions were recently mentioned in this report, has decided upon plans for steel-frame buildings, 75 x 145 and 80 x 140 ft., joined at the ends, and contract for the steel work has been let to the Milwaukee Bridge Company.

Allis-Chalmers Company has received from the city of Baltimore, Md., an order for three horizontal twin engines, 22 x 36 in., direct-coupled to plunger pumps which will maintain a pressure of 300 lb. They will be used for the new high pressure fire service system to be installed in that city. The Lake Superior Iron & Steel Company, Sault Sau Marie, Ont., has ordered three two-stage centrifugal pumps, together with motors for operating them.

The Scott-Taylor Company, Ashland, Wis., is in need of a blower for an exhaust refuse system.

It was recently predicted in this report that a third motor-truck company would enter the local field, and last week witnessed the organization of the Brodesser Motortruck Company, Milwaukee, incorporated for $125,000. Plans for the establishment of manufacturing facilities have not yet been announced, but the plant of the Brodesser Elevator Company will probably be used for the present, as some work on auto-trucks has already been done there.

Government Purchases.

WASHINGTON, D. C., November 16, 1909.

Bids will be received until November 20 at the office of the Ordnance Department, Rock Island Arsenal, Illinois, for a coal handling equipment for the boiler house.

The Treasury Department, Washington, D. C., will receive bids until December 18 for a power plant, including boilers, engines, generators, switchboard, deep well pumps and accessories for the Custom House and appraiser's stores at San Francisco, Cal.

The following bids were opened November 9 for supplies for the navy yards:

Class 1.—One universal tool grinding and shaping machine—Bidder 113, William Sellers & Co., Philadelphia, Pa., $1115; 128, Toby Mfg. Company, Philadelphia, Pa., $1143.

Class 11.—Eight 15-hp. motors—Bidder 1, Allis-Chalmers Company, Milwaukee, Wis., $327.80; 18, Burke Electric Company, Erie, Pa., $409; 37, Crocker-Wheeler Company, Ampere, N. J., $560, $300, $390 and $150; 42, Diehl Mfg. Company, Elizabethport, N. J., $322.50, $350 and $281; 44, Electro-Dynamic Company, Bayonne, N. J., $362; 45, Fidelity Electric Company, Lancaster, Pa., $352; 47, Fort Wayne Electric Company, Fort Wayne, Ind., $339.35; 50, Garwood Electric Company, New York, $354; 51, General Electric Company, Schenectady, N. Y., $418.50 and $372; 56, Holtzer-Cabot Electric Company, Brookline, Mass., $300; 91, National Electrical Supply Company, Washington, D. C., $410; 107, B. F. Sturtevant Company, Hyde Park, Mass., $366; 124, Sprague Electric Company, New York, $416 and $378; 153, Reliance Electric & Engineering Company, Cleveland, Ohio, $462 and $377.

Class 21.—Two vertical simplex piston steam pumps—Bidder 22, Blake & Knowles Steam Pump Works, New York, $674; 36, A. S. Cameron Steam Pump Works, New York, $1135; 38, M. T. Davidson Company, Brooklyn, N. Y., $487.50; 40, Dobler & Mudge, Baltimore, Md., $925; 140, Warren Steam Pump Company, New York, $440.

Class 61.—One four-cylinder heavy duty gasoline engine—Bidder 5, Avery Hardware & Supply Company, Pensacola, Fla., $1322.80; 53, Gas Engine & Power Company, Morris Heights, N. Y., $1750; 62, Holmes Motor Company, West Mystic, Conn., $1750; 74, Lamb Engine Company, New York, $917; 78, Lackawanna Mfg. Company, Newburgh, N. Y., $785.20; 87, Murray & Tregurtha Company, South Boston, Mass., $1550; 108, Standard Scale & Supply Company, Pittsburgh, Pa., $1204.54; 115, Sterling Engine Company, Buffalo, N. Y., $1050.

Bids were opened October 29 by the inspector of the fourth lighthouse district, Philadelphia, Pa., for one Scotch marine boiler for light vessel No. 69, as follows:

Harlan & Hollingsworth Corporation, Wilmington, Del., $5235, accepted. New York Shipbuilding Company, Camden, N. J., $5990. Wm. Cramp & Sons Ship & Engine Building Company, Philadelphia, Pa., $5990.

The Smith & Watson Iron Works, Portland, Ore., has recently completed and equipped a machine shop 110 x 200 ft., and has in the course of construction a foundry 80 x 208 ft. which will have a capacity for turning out castings weighing up to 20 tons, and special attention will be given to the manufacture of logging and sawmill machinery. Contracts for the equipment of this building have been placed and the work of erection will be completed by the first of the year. The company is now drawing plans for a plate and forge shop to be erected in connection with the plant next spring. All the buildings will be fireproof and their total cost will be in the neighborhood of $200,000. While the company is not in the market at present for any new equipment, it is quite probable that considerable new machinery will be required upon completion of the last mentioned building.

The American Institute of Chemical Engineers.

The following programme has been prepared for the annual meeting of the American Institute of Chemical Engineers, to be held at Philadelphia, Pa., December 8 to 10:

Wednesday, December 8.

Meeting at Hotel Walton at 10 a.m.
Address of welcome by Mayor John E. Rayburn.
Business session.
Reports of officers and council.
Reports of committees.
Reading of papers:
1. "Natural Draft Gas Producers and Gas Furnaces," by Ernest Schmatolla.
Discussion by O. K. Zwingenberger and G. E. Barton.
2. "The Commercial Extraction of Grease and Oils," by Wm. M. Booth.
Discussion by Frederick Dannerth, Louis Olney and Samuel P. Sadtler.
Luncheon at Hotel Walton at 12.30 p.m.
Visit to chemical, engineering and physical laboratories of the University of Pennsylvania.
Visit to Commeercial Museum of Philadelphia.
Luncheon at works of Harrison Bros. & Co., Gray's Ferry Road.
Excursion through works (admission by card only).
Address of retiring president at 7.30 p.m.
Address on "The Chemical Industries of America," by Prof. Chas. E. Munroe.

Thursday, December 9.

Members of the Institute and their guests will assemble at 9.30 a.m. at Race street wharf on the Delaware and be conveyed by city boat to the Torresdale filtration plant, returning stop at Tacony to visit the wool degreasing plant of Erbin, Harding & Co.

Luncheon at 12.30 p.m. at the works of the Welsbach Light Company as the guests of the compaany.
Excursion through the works of the company.
Return at 3 p.m. by boat to Kaighn's Point and excursion through by-product coke oven plant of the Camden Coke Company.
Return at 5 p.m. to Chestnut street wharf, Philadelphia.
Subscription dinner at 7 p.m. at Hotel Walton (3).

Friday, December 10.

Installation of officers and business meeting at 9.30 a.m.
Reading of papers:
3. "Multiple Effect Distillation," by F. J. Wood, mechanical engineer of Marx & Ravolle's glycerine refinery.
4. "The Advantages of the Multiple Effect Distillation of Glycerine and Other Products," by A. C. Langmuir.
Discussion by S. S. Sadtler and Chas. L. Reese.
5. "Reclaiming of Waste India Rubber," by S. P. Sharples.
Discussion by Wm. M. Grosvenor.
Luncheon at Hotel Walton at 12.
Leave Broad Street Station at 1 p.m. for Trenton, N. J.
Excursions through works of Trenton Potteries, Hamilton Rubber Company and Linoleum Works.
Reading of papers at 7.30 p.m.:
6. "Materials for Textile Chemical Machines," by Frederick Dannerth.
Discussion by Louis A. Olney and J. M. Matthews.
7. "The Manufacture of Carbon Bisulphide," by Edward R. Taylor.
8. "Chemical Composition of Illinois Coal," by A. Bement.
9. "Heat Efficiency of Smokeless Combustion, and Heat Absorbing Capacity of Boilers," by A. Bement.
Final business meeting at 9 p.m.

Saturday, December 11.

Visit to cement plant at Allentown, Pa.

The secretary of the institute is John C. Olsen, Polytechnic Institute, Brooklyn, N. Y.

The Union Sheet & Tin Plate Company, Farmers' Bank Building, Pittsburgh, reports that it is now operating its four mill plant at Marietta, Ohio, which is running on black sheet specialties, such as uniform blue, white annealed, and for deep stamping purposes. The company expects to start the tin mills in this plant about January 1. At its Hazleton, Pa., plant a force of men is at work putting the machinery in order, expecting to start about December 1. This plant contains four sheet mills and a galvanizing and roofing department, and will turn out corrugated and flat sheets and roofing materials.

HARDWARE

THE question of the wisdom of reducing, maintaining or advancing prices is one which is usually considered in the broad fields in which the large interests operate. It certainly calls for wise decision on the part of the great concerns in the production of raw material, whose conservatism and wisdom during the recent depression are so generally acknowledged. It comes home, too, to each manufacturer who takes the crude products and works them into finished articles. The jobbers also through whom such large quantities of goods are distributed have to meet the question practically and to decide whether to maintain, advance or cut prices on the great variety of goods handled, and to count the gains and losses from whatever policy may be pursued.

Determining Selling Prices

But not only to manufacturers and large operators does the question of making prices come home. The retail merchant is often under the temptation, even in good times, to slaughter prices with a view to getting the business of his community. To this end he undersells his competitors and with a flourish of trumpets often cuts prices on some goods of minor or major importance. Many sales are probably made, but a demoralizing element has very likely been introduced; the effect of which will long be felt. The competitor, if actuated by natural impulses, will be likely to return the compliment in his own way, and an unsatisfactory state of things is brought about. The whole question of the making of retail prices is a difficult and complicated one, and many elements enter into the problem. While it is undoubtedly true that many Hardware merchants hold goods at unreasonably high prices it is proper that they should avoid going to the other extreme. It is well for them to bear in mind the wisdom of conservatism, so far as cutting prices is concerned, remembering that a cut, which at the time appeared to be advantageous, often results in a demoralized and unprofitable market. Those who make the break suffer the consequences as well as their competitors. The slaughter of prices is usually a boomerang.

Retail Merchants and Cut Prices

In many parts of the West the regular distributors of Stoves and Ranges find a serious interference with their business in the activity of the peddlers who canvass the country districts and sometimes the towns and villages, and thus dispose of many goods. The irresponsible character of these itinerant merchants, the inferior quality of the goods they handle, the questionable methods to which they not infrequently resort, and the fact that they escape taxation and contribute nothing to the maintenance of the communities they visit cause them to be regarded with disfavor by the regular merchants. Many attempts have been made to secure the enactment of legislation which will regulate this method of doing business and put these outside operators under proper control, for the protection not so much of the merchants as of the public. The subject has frequently been discussed in the meetings of the State associations and many resolutions have been adopted in opposition to the work of these irresponsible vendors. Several of the States, deeming that the situation called for legislative attention, have passed laws to prevent this method of marketing wares, but these laws have usually been thrown out by the courts as unconstitutional. This is a matter which has received much attention in the State of Washington, and a carefully devised and stringent law was enacted on the subject. The constitutionality of this law has been assailed in the courts, but has been upheld in the Supreme Court of that State. A feature of the Washington law is that peddlers of certain classes of goods are allowed to operate without making the heavy deposits or taking out the expensive licenses which are otherwise required. As relating to a matter of much general interest we refer on a later page to the features of the law and the salient portions of decision sustaining it. It is obvious that caution must be exercised in attempting to place such restrictions on trade and enterprise, and that there is danger that laws which seem to accomplish a present good may ultimately prove injurious. In view of the important principles involved and the complexity of the question, there is little doubt that the matter will be carried to the Supreme Court of the United States for final adjudication.

Legal Regulation of Peddlers

Condition of Trade.

There is a marked difference in the state of the market for heavy products as compared with miscellaneous Shelf Hardware and the finer finished goods. The difference relates both to the matter of prices and of supply. The raw material and the products which lie near it are continuing to show an advancing tendency and in several leading lines higher prices have very recently been announced. This is true of Coil and Trace Chain, Iron and Steel Bars, Sheets and Roofing, Galvanized Iron Ware, Tin Plate and many other heavy products. The market also in these and other similar lines is regarded as decidedly strong. At the same time there is in raw material generally and in the crude products just referred to more or less difficulty in securing the prompt execution of orders. In fact the matter of getting material from the mills is with an increasing number of manufacturers becoming one which demands serious consideration, especially where, owing to the character of the business, the special circumstances of the case or neglect to make adequate provision for future

requirements, orders were not placed some time ago, thus enabling the manufacturers to get deliveries as now needed. With the pronounced revival of trade the increase in the price of Steel and Iron, which is natural and practically inevitable under these conditions, is bearing unpleasantly on some manufacturers who booked orders from the jobbers months ago but neglected to cover their material at the lower prices then ruling. In general Hardware, while the market is in excellent condition and has a strong tone, there is not nearly so much in the way of advances, and the great run of goods are held firmly at about the old level or slightly higher. Nor is there nearly as much difficulty in securing reasonably prompt execution of orders, except in comparatively few lines in which the demand has run ahead of the capacity of the factories. There is, however, a general feeling that with the anticipated continuance of a good demand during the next few months, with something of a lull at the holiday season, the ability of the mills and factories will be overtaxed so that one of the possibilities of the future is a scarcity of goods and the inconvenience and disturbance of the regular movement of trade. Over against this view of the case it is to be remembered that the manufacturers never have been in as good condition as at present to turn out goods, as their plants are undoubtedly in fine shape, much attention having been given in dull times within the past two years to getting things in order for the renewal of prosperous business conditions. With the strength of the Iron market and the activity in trade prices for Hardware are thus naturally firm, and here and there advances are constantly being made. There is, however, an unwillingness on the part of manufacturers to advance prices prematurely or unduly for fear of making the trade suspicious of the stability of values, and in view of the disadvantage and discomfort there is in having to retreat from a level too high to be permanently maintained.

Chicago.

As forecasted by recent reports in *The Iron Age*, there has been a general advance in the prices of Sheets. Effective November 11 the mill prices on No. 28 Black Sheets were advanced $2 and No. 28 Galvanized $3 per ton. Store prices in Chicago are advanced to a corresponding degree, making No. 28 Black $2.58 to $2.68 per 100 lb. and No. 28 Galvanized $3.68 to $3.78. Blue Annealed Sheets have also been advanced, making prices from store, Chicago, for No. 10 base, $2.25 to $2.35, No. 12 $2.30 to $2.40, No. 14 $2.35 to $2.45 and No. 16 $2.45 to $2.55. On Corrugated Sheets the Chicago price from store to the trade is $2.30 to $2.35 per square for No. 28 and $3.50 to $3 per square for No. 28 Galvanized. At the new level of prices the mills are now taking contracts from jobbers and large consumers for shipment up to July 1, thus placing the business on a permanent basis for a considerable period in the future. The mills have been crowded with specifications and probably have business booked to carry them far through the first quarter, but as jobbers and large consumers make a practice of specifying for their requirements many months in advance this condition does not affect the distributing trade through jobbers. In most lines of Hardware the manufacturers are falling into the same condition of business which has this fall prevailed in the steel mills, as they are many weeks behind on their shipments and there is every indication that their business for next year will be very heavy. This makes the market very firm in all lines of Hardware, and the jobbers have had difficulty in keeping their stocks filled out to take care of their heavy fall trade.

Nashville.

GRAY & DUDLEY HARDWARE COMPANY.—The Hardware business in this section of the country continues exceedingly satisfactory. Sales in all lines are heavy, and the increase in volume over last year is very large.

We have never seen such an early demand for spring goods as we are having now. A great majority of the retail merchants throughout the South are now placing spring orders in all lines, and they are no doubt acting wise in doing so, as everything indicates that after January 1 merchandise of all kinds will be high, and there will also be a great scarcity of goods. Collections are excellent.

St. Paul.

FARWELL, OZMUN, KIRK & Co.—The conditions in which we are about to enter on the closing months of the year are favorable. Only a little more than 30 days now remains before active business and orders will probably soon begin to show a falling off.

The first half of November has just about kept pace with October, but this can hardly be expected from the last half of the month. It depends largely on the weather. If it is favorable the business is sure to come. But as we approach December it may be expected that there will be less demand for some lines of goods; while, on the other hand, there will probably be an increased demand for seasonable goods caused by these same conditions, so altogether business promises to be satisfactory.

Our fall trade is always necessarily dependent to a considerable extent on the conditions of farm work. The largest hindrance to business this fall has come from the fact that farmers have been unusually busy in farm work; and, therefore, have not bought as many goods as they otherwise would have done.

This condition has also affected collections to some extent, although, upon the whole, collections have been good. The grain has come to market slower than usual, but the movement has been steady, and it is going on, and at the close the country will generally be in good shape.

The present condition of the market in the matter of price will have a healthy influence on trade. A strong, firm market without being a runaway is very desirable. Present conditions promise well for the business of the coming year.

Two important events of the day have been attracting considerable attention in the West. One of these is the work of the Deep Waterways Commission appointed by Congress, and which is now on its way to New Orleans, having started from St. Paul and making the entire trip by river. The report of this commission to Congress will be awaited with deep interest.

The other event referred to is the visit which Senator Aldrich, chairman of the Monetary Commission, and his associates are now making. The work before this commission is of the highest importance to the whole country, and its report will attract corresponding consideration.

Cleveland.

W. BINGHAM COMPANY.—The month of October was certainly a record breaker in actual business in Pig Iron. It is reported that 206,295 more tons were made in October of this year than in October, 1907. The total production figures up in round numbers about 2,566,000 tons. That is going some, isn't it?

It is reported that the railroads are having a car famine. The great cry of all traffic managers on the big railroads is, "Give us more rolling stock." Local business in and out of Cleveland is immense, but the railroads in this section have so systematized their freight business that they are giving manufacturers and merchants of this section very good service.

Combination seems to be the order of the day among the farmers, in spite of their adverse comments in former times. We note that a combination has been formed to raise the price of milk from 6 to 7 cents, and eggs and other farm products are being cornered. So it goes. Prosperity is in the air, and every one in all stations of life seems disposed to take advantage of the times.

Prominent bankers and manufacturers returning from visits to Europe report a good healthy feeling in foreign countries. In Germany particularly progress and prosperity are very pronounced.

The big manufacturers and producers throughout the country are very optimistic. The Steel industry is thriving as never before, and as that is generally con-

sidered the barometer for other lines, the future seems to be well assured.

It looks very much as though the manufacturers, especially the old, solid ones, those who are conservative and know how to control matters, are bound not to have an erratic market. They will not accept orders in blank and they must be specified. The old way of taking what you want and canceling the balance is played out and all orders must now be specified and drawn out.

A good deal of business is being booked now for immediate shipment, and the first quarter of next year for Tin Plate, Shovels and Spades, Screen Door Spring Hinges (separate and in sets), and Agricultural Tools, such as Field Hoes, Garden Rakes, Grass Hooks, Scythes, Snaths and the like. Many orders are also being booked for Poultry Netting. The makers of Netting are accepting orders only for shipment before February 1, and it looks as though they will announce new prices on this commodity a little before that date. These goods are in strong hands, and, having started in with a low conservative price, there is a chance for an advance.

Full weight Iron Pipe has advanced one point in the discount, and we anticipate an advance in Merchant Steel Pipe soon.

Malleable Fittings have also advanced 5 per cent., and we believe there will be a revision and advance in Cast Iron Fittings, and in all probability Brass Fittings, for at present prices they are not on a parity with Ingot Copper. It is not so much a question nowadays of prices on goods as it is, "Have you got them and can and will you ship them reasonably prompt?"

The consumption of all kinds of Hardware is large at this time and is growing.

Boston.

BIGELOW & DOWSE COMPANY.—The first half of November has made a fair showing and merchants have realized a steady volume of business without the breaks which characterized the preceding months.

Careful study fails to find a reason for a certain hesitency that comes suddenly, at times when everything indicates prosperity. The depression lasts a short time, but like a summer shower it soon passes away and leaves no trace of its presence except in reduced sales. Notwithstanding these freaky conditions the total volume of business is much greater than in 1908 and is ahead of 1906.

All we are kicking about is why we should enjoy a business of say 40 per cent. over normal a part of the month and lose a large part of this increase before its close? Some new governing forces seem to be at work and we would like to know what they are.

Yesterday the mercury recorded 75 degrees and beat the high record since the weather bureau was established. The retail dealers as a rule are not overstocked and are buying carefully, as the unseasonable weather makes them cautious.

Prices are fair and advances are being well maintained. No careful student of the present conditions of the Iron and Steel markets can see any indication of lower values, for everything indicates a large and increasing demand for a full output for all the month. Many have delayed covering their wants for seasonable goods, but the trade is sure to come with a rush with the advent of cold winter weather.

During the past week Boston has added to its many attractions by opening the new Art Museum, where the lovers of art can revel in buildings which are beautiful to behold. Opera, too, has a new home near by, where the lovers of music may enjoy its charms in one of the finest opera houses in the world. Heretofore Boston has been dependent on New York for a short season of opera. Now it has a house and a thoroughly organized troupe of its own.

Louisville.

BELKNAP HARDWARE & MFG. COMPANY.—We take it that all of the Hardware people are extremely busy. They talk that way; they write that way; they ship that way, or rather, they fail to ship as rapidly or as completely as the buyers would like. All of the business people seem to have their offices buzzing, and the salesmen of the road come in smiling and expect to be smiled with and to be loaded down with orders.

A good deal of building is projected in the cities, while many problems of industrial development are being discussed and got into shape for future use. Meanwhile the social economic people—alliances and federations—keep us busy with suggestions of meetings, banquets and reports. We have to go at breakneck speed in automobiles in order to keep up with the procession of civic betterment planned and already in operation.

Railroads are pretty liberal buyers at present. The generally spread out traffic makes such demands that their old equipment will not answer, and the promised showing on the balance sheet in January justifies liberal anticipation.

Social disorder crops out daily or nightly in some shape in the cities and in the country. The morning paper brings us the horrible details of a bank robbery across the river in Indiana, attempted by a boy of 17 years, which resulted in three men being shot. A double lynching disgraces Illinois. The tardiness of justice is responsible, as has been stated many times, for some of this lawlessness, at least. In the Illinois case, one of the men lynched had been in jail since last July for murdering his wife with an axe. Probably, if some move had been made promptly enough, at least, to justify the belief that it would be dealt with as such crimes should be, this popular demonstration and summary execution would not have occurred.

Really it looks sometimes as though the criminal laws were made specially for the protection of the criminals and not for the peaceful man, who is content to go about his business without being loaded down with Revolvers.

Our President's insistence on the improvement needed in the criminal laws and court proceedings ought not to fall on deaf ears at this time. Speaking of the President, what a wonderful swing around the circle he has made—13,000 miles! It is a precedent which future lords of the White House will probably find difficult to follow, just as the army officers found his predecessor's test of endurance by 50-mile horseback rides woefully conducive to soreness, both in mind and body. A Pullman seat is vastly easier for a Major-General in times of peace than an army saddle, however, and the support much more certain than the back of a horse.

1910 promises to be a year of great activity.

St. Louis.

NORVELL-SHAPLEIGH HARDWARE COMPANY.—Business continues in very satisfactory volume. The trade are waiting for official prices on Wire Cloth and Screen Doors. Retail merchants are somewhat slow placing orders for Poultry Netting. They do not see why they should be in such a hurry, as the Netting season seems a good ways off. From the manner in which some salesmen grab for this business you would think it paid a handsome profit. As a matter of fact, in selling Poultry Netting the jobber does not get back the cost of doing business.

The general prosperity of the country is shown in the increased sales of Cutlery and Christmas goods. We are glad to see the retail Hardware merchant devoting more attention to Christmas business. All of us buy presents. The retail Hardware merchant buys presents from other merchants. It is only reciprocity that he in turn should sell these other merchants presents in the Hardware line. It is not considered appropriate for a merchant to give a Christmas present out of his own stock. Therefore, why would it not be a good idea for the retail Hardware merchant to buy his presents from other merchants on the condition that these other merchants buy some of their Christmas presents from him? That would be reciprocity.

A good sharp cold wind would help business in our territory. So far we have had beautiful fall weather, but it has been too warm.

Salesman are now making their arrangements for next year. The unworthy are being given notice. Numerous letters are being received asking for positions for

next year. Those who employ salesmen are naturally on the lookout not to pick up inefficient, lazy or vicious salesmen, who have been dropped by their competitors.

On inquiring into the records of some salesmen it is interesting to observe what varied experiences they have had with a large number of different houses. I suppose the houses they represented had experiences also. As things now go, this class of salesmen can grasshopper from one job to another for a number of years before they finally come to the end of their rope.

Philadelphia.

SUPPLEE HARDWARE COMPANY.—Since our last letter there has been no noticeable change in conditions. Orders are reaching us from our representatives which are fairly good in volume and we think increasing in size. Prices to-day are ruling about the same and there is no change of any moment to notice.

In our neighborhood we cannot but notice the great amount of new building operations, we think more than for many years, and from the reports from manufacturers of Builders' Hardware and the length of time it takes to have orders completed, we certainly believe that this line is enjoying quite a boom.

We feel that the return to normal conditions which maintained prior to the panic is gradually and surely being made, and we are looking forward to the year 1910 for business conditions that will be entirely satisfactory. We feel that next year will show results beyond our expectations.

As mentioned in our former letter we take it as a sure indication of the revival of business that all the rolling stock of all the great transportation companies is being called into use, and there are but few idle cars at the present time.

Collections continue about as usual. Orders for season goods for future shipment are showing up in fairly good volume and on the whole we believe conditions to be very healthful.

Portland, Oregon.

FAILING-MCCALMAN CO.—With the approach of the Thanksgiving season we feel that we of the Pacific Northwest have many things to be thankful for this year, as we have all made substantial increases in our business as well as in our profits during the year. Almost all natural conditions have been favorable, as we have had excellent crops and high prices.

New territory has been opened up during the past year to the trade of the Pacific Northwest, and especially Portland. In every way we feel very pleased with the showing of the past year, and are confident of an even better year to come.

NOTES ON PRICES

Wire Nails.—There is a fair movement of Nails both from jobbers' stocks to retail merchants and from manufacturers to jobbers. The purchases of low priced Nails in May of this year must have been very heavy, or jobbers largely overestimated their requirements, as these stocks are apparently not as yet entirely exhausted. The market is decidedly firm, and one interest is reported as not accepting orders at less than $1.90, base. Quotations continue as follows: F.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads, to jobbers	$1.80
Carload lots to retail merchants	1.85
Less than carloads to jobbers	1.85
Less than carloads to retail merchants	1.95

New York.—A moderate, though continuous demand for Wire Nails characterizes this market. The general quotation for small lots at store is $2 per keg, base, but cheaper stocks of Nails causes some unevenness in the market.

Chicago.—New buying and specifications on contracts continue in fair volume for the season. No information is available in this market regarding prices for next year. We quote as follows: $1.98, Chicago, in carloads to jobbers, and $2.03 in carloads to retailers, with an advance of 10 cents for less than carloads from mills.

Pittsburgh.—The market is tightening up very persistently, and giving all indications of an early advance in prices. One leading maker of Wire Nails has withdrawn all former prices, and will not quote under $1.90 for Wire Nails, and is making this price only for shipments within 60 days from date of contract. Stocks held by jobbers are being slowly worked off, but specifications at present are not quite as active as they were a month or two ago. New demand for Wire Nails is fair, but it is evident that most of the large jobbers still have stocks of Nails on hand, and are not yet ready to place new orders. The tone of the market is very strong, and an advance of about 10 cents in prices of Wire Nails prior to January 1 is expected by some. We continue to quote Wire Nails $1.80, base, f.o.b. Pittsburgh, in carload and larger lots for delivery within 60 days from date of order. As stated above, one leading maker is holding Wire Nails at $1.90, base, and will not shade this price.

Cut Nails.—The mills are being favored with a fair business in the way of new orders and specifications on contracts. Owing to high prices of Nail Slabs the market is taking on a firmer tone. Quotations are on the basis of $1.80 to $1.85, in carload and larger lots, f.o.b. Pittsburgh.

New York.—Cut Nails are in comparatively light demand at this time. The local market is generally represented by the quotation of $2 per keg, base, for small lots at store, but this price is shaded occasionally by some jobbers.

Chicago.—No change is reported here in quotations for Cut Nails. Buying by railroads for car work is the principal feature of the trade. We quote in carloads to jobbers, Steel Cut Nails, $1.98 to $2.03; Iron Cut Nails, $2.08 to $2.13.

Pittsburgh.—The market is showing a decided hardening tendency, and it would not be surprising if an advance in prices of Cut Nails is made in the near future. The mills are very well supplied with contracts against which buyers are specifying freely, while new orders are also coming in actively. Some mills cannot obtain prompt supplies of Nail Slabs except at high prices, and it is said that Cut Nails at $1.80, base, leave only a small margin of profit to the maker that buys his steel in the open market. We quote Cut Nails at $1.80 to $1.85, f.o.b. Pittsburgh, in carload and larger lots.

Barb Wire.—The demand on the mills includes some new business and specifications on contracts, but the volume of business while moderate is as large as should be expected as late in the year as this. One manufacturer is reported as having advanced prices $2 per ton. The market is firm at previous quotations, f.o.b. Pittsburgh:

	Painted.	Gal.
Jobbers, carload lots	$1.80	$2.10
Retailers, carload lots	1.85	2.15
Retailers, less than carload lots	1.95	2.25

Chicago.—The market is quiet, with the usual volume of new business and specifications on 60-day contracts. We quote as follows: To jobbers, Chicago, carloads, Painted, $1.98; Galvanized, $2.38. To retailers, carloads, Painted, $2.03; Galvanized, $2.33; retailers, less than carloads, Painted, $2.13; Galvanized, $2.43. Staples, Bright, in carloads, to jobbers, $1.98; Galvanized, $2.28; carloads, to retailers, 5 cents extra, with an additional 10 cents for less than carloads.

Pittsburgh.—Mills are running mostly on specifications against contracts placed some time ago, when prices were lower than they are now, specifications on these contracts coming in quite freely. There is a fair amount of new business being placed, but the mills do not look for a heavy new demand at this time of the year, which is usually regarded as the dull season in this trade. One leading maker of Barb Wire has withdrawn former prices and is now quoting an advance of $2 a ton on new orders. We quote Galvanized Barb Wire at $2.10 and Painted at $1.80, in carload and larger lots, f.o.b. Pittsburgh, subject to usual terms.

Fence Wire.—The heaviest demand comes from manufacturers of Wire Fencing, who have a large volume of

orders booked for their products. Jobbers are referred to as having stocks on hand sufficient to supply customers. The market is firm at regular quotations, as follows: To jobbers in carload lots on a basis of $1.60 for Plain and $1.90 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the usual price to retailers being 5 cents additional:

Nos.	0 to 9	10	11	12&12½	13	14	15	16
Annealed	$1.60	1.65	1.70	1.75	1.85	1.95	2.05	2.15
Galvanized	1.90	1.95	2.00	2.05	2.15	2.25	2.65	2.75

Chicago.—Wire Fence manufacturers expect a heavy spring trade, and their specifications with the mills for material this fall have been so generous as to excite suspicion that they were accumulating stocks beyond their requirements. Careful investigation has shown that they are merely taking care of their trade and that their specifications are for legitimate requirements. We quote as follows: Carloads, to jobbers, $1.78, base, f.o.b. Chicago.

Pittsburgh.—Demand from manufacturers of Wire Fencing is very active, but from jobbers is rather light, as they still have large stocks on hand from which to fill orders, bought when prices were lower than they are now. These stocks are being gradually worked off, but have not moved as freely as expected. We quote Plain Wire at $1.60 and Galvanized at $1.90, f.o.b. Pittsburgh, but note that one leading maker is quoting $2 a ton higher on new business.

Sheet Iron.—Black Sheets were advanced November 11 10 cents per 100 lb, prices now quoted from store in New York being based on $3.10. Galvanized Sheets are up 15 cents, quotations from store in New York ruling at $4 per 100 lb. The carload base at Pittsburgh, f.o.b., is materially lower. This increase is in addition to the advance of 10 cents on both Black and Galvanized Sheets October 1.

Corrugated Metal Roofing.—Sheet metal painted Corrugated Roofing, based on 2½ in. corrugations, advanced November 11 10 cents per square on the light gauges. Out of store in moderate quantities $2.30 per square is being quoted. Sheet Metal Galvanized Corrugated Roofing, 2½ in. corrugations, on standard gauges, was also moved upward 15 cents per square. Out of store this commodity is offered at $3.45 per square. In carloads, f.o.b. Pittsburgh, there are substantial concessions from these rates.

Malleable Iron Fittings.—Malleable Iron Fittings for water, steam and gas were advanced November 4 5 per cent. to 50 per cent. discount, the former base having been 52½ per cent. off the list. The old base has been 45 per cent. discount for five or six years, from which extra 5s were given by many to meet the market, while others used the lower base, but made fewer concessions.

Poultry Netting.—Owing to the urgency with which some of the jobbers have expressed a desire for a reinstatement of the customary differential on orders in carloads of Poultry Netting, the usual 2½ per cent. discount has been restored from November 15.

Painted Wire Cloth.—Under date of November 15 manufacturers of Painted Wire Cloth announce their prices for the ensuing season on the basis of $1.30 per 100 sq. ft. on shipments up to February 1. This is a reaffirmation of last year's prices, and a reduction from the $1.35, base, named subsequently.

Galvanized Ware.—The advances in Black and Galvanized Sheets has caused a firmer tone in these lines, especially in Pails, Tubs, Ash Cans, Garbage Cans and Oil Cans. It is also noticeable in Japanned and Galvanized Coal Hods and in Dripping Pans. There is no concert of action among the manufacturers, but advances in price of from 5 to 10 per cent. have been made. This is explained as the result of the higher cost of raw material and a more pronounced demand, in some lines of which there is a full supply of orders. It is pointed out that past prices on Galvanized Wares were based on 4-cent Spelter, which is now over 50 per cent. higher.

Eagle Carriage Bolts.—The manufacturers of Eagle Carriage Bolts on November 16 reaffirmed prices. The market prices now being quoted on fair orders range from 80 and 5 to 80 and 10 per cent. discount, with quantity discounts to the large trade.

Bolts, Lag Screws, &c.—The manufacturers of Bolts, including Common Carriage, Machine and Tap Bolts, Bolt Ends, Gimlet Pointed Coach and Cone Point Lag Screws, on November 16 reaffirmed without modification the prices established October 19, at which time an advance of 5 per cent. was made.

Dripping Pans.—Dripping Pans, in common with kindred sheet metal products of this character, are higher in price, and in certain quarters manufacturers are far behind in deliveries for this year. In some instances there appear to be no stocks in store. This situation is further aggravated by a recent fire, which destroyed a manufacturer's stock of these goods. Prices from stock are represented by 75 and 10 per cent. discount, but lower prices are made on carload business.

Rivets.—The makers of bulk Rivets on November 16 reaffirmed the prices made on October 19—viz.: Structural Rivets, $2.15, and Boiler Rivets, $2.25, per hundredweight, f.o.b. Pittsburgh.

Rope.—The requirements of the trade show no falling off, and demand is of gratifying volume. Manufacturers do not believe that the time has yet arrived when it would be advisable to advance prices. Sisal Fiber remains quiet at unchanged prices, but Manila Fiber shows advancing tendencies with quite an active demand from manufacturers. The market is represented by the following quotations: Pure Manila of the highest grade, 8 to 8¼ cents per pound; lower grades of Pure Manila, ¼ to ¾ cent less. Pure Sisal of the highest grade, 7¼ to 7¾ cents per pound, base; Commercial grade, 6¼ to 6½ cents per pound. Rove Jute Rope, ¼ in. and up, No. 1, is quoted at 5 to 5½ cents per pound.

Window Glass.—There is nothing encouraging to report regarding the progress made in the formation of the Imperial Window Glass Company. It is understood that those who have the matter in charge feel that if the project cannot be closed up in the near future, it had better be abandoned for the present at least. According to reports there is now in operation a capacity equaling 1600 hand pots, and it is expected that about 200 additional pot capacity will be started in the early part of next month. The strike in the machine factories is assumed to be nearing an end, as the assertion is made by a journal devoted to Glass interests, that the American Window Glass Company will start up another tank this week, and that additional tanks will be put in operation so that within two or three weeks all the company's 116 machines will be turning out Glass. Such a quantity of Glass as may be turned out by hand, and machine factories, without any restraining influence, such as the Imperial Window Glass Company was expected to exert, will be a menace to the stability of the market. The demand this fall has been better than during the same period last year, being somewhat in proportion to production; the strike of the American Window Glass factories curtailing output considerably. In January buying usually falls off to a large extent, and prices are likely to slump without some strong supporting influence. The Eastern Window Glass Jobbers' Association has recommended an advance of about 5 per cent. on both Single and Double Strength Glass in New England territory and in the State of New York. Otherwise discounts are unchanged from jobbers' list of October 1, 1903, as follows:

New England territory: Single, 90 and 25%; double, 90 and 30%.
New York State: Single, 90 and 25%; double, 90 and 30%.
New York State, factory shipments: Single, 90 and 30%; double, 90 and 35%.
Southern States: Single, 90 and 20 to 90 and 30%; double, 90 and 25 to 90 and 40%.

Spirits Turpentine.—The market has been devoid of interesting features this week, as the demand has been confined to small lots. It is estimated that export shipments from Southern points have been 71,000 casks less than last year, the use of substitutes being regarded as the cause of the falling off. Prices are about ½ cent less per gallon than last week. New York quotations are as follows: Oil Barrels, 57½ to 58; Machine Barrels, 58 to 58½ cents.

Linseed Oil.—The market continues firm, in sympathy with the Seed market, which has advanced in price. Out of town Raw, in 5-bbl. lots or more, has been

advanced to 64 cents, with City Raw 1 cent higher. These prices are 2 cents advance on those prevailing last week. Withdrawals on contract orders are in fair quantities, but new business is light. The season of heaviest demand is about over and buying pressure will be lighter from now on; but crushers have accumulated no stocks of Oil or Seed, and the market will probably continue sensitive to Seed fluctuations for some time. Quotations in 5-bbl. lots or more are as follows:

	Cents.
Out of town Raw	64
City Raw	65
Boiled Oil, advance per gallon	1
Less than 5-bbl. lots, advance per gallon	1

Nuts.—Makers of Cold Pressed Nuts on November 17 advanced prices 10 cents per 100 lb., the new prices being as follows:

	Off list.
C. P. plain square Nuts, blank or tapped	5.00
C. P. plain hexagon Nuts, blank or tapped	5.60
C. P., C. T. & R. square Nuts, blank or tapped	5.40
C. P., C. T. & R. hexagon Nuts, blank or tapped	6.20
Semi-finished Nuts, discount	80 and 10 and 5%

No change in price on Hot Pressed Nuts was made.

Leather Belting and Lace Leather.—The market for Leather Belting and Lace Leather shows a firmer tone and some advances have already been made, in view of the much higher prices for hides and an improved demand. Manufacturers in these lines are now reviewing the situation and considering the question of further action.

HARDWARE MERCHANTS ON UP-TO-DATE TOPICS.

Mail Order and Parcel Post.

Is the Danger Real?

IN the letter published below our correspondent thinks that Hardware and other merchants are unduly alarmed over the possible effects of the enactment of a domestic parcel post, for which the large mail order houses have been clamoring for some years past, under the leadership of the so-called Postal Progress League, one of whose methods of securing countenance and support for its crusade was exposed in a recent issue of *The Iron Age*. While we do not share our correspondent's view concerning parcel post, and, in fact, regard it as a menace to the prosperity and welfare of the smaller cities and the towns and villages of the country, and also to be condemned on general grounds, we give the letter a place in our columns because of its stimulating character and the moral pointed by it as to the necessity for the merchant to adopt up-to-date business methods, and put energy and enterprise into the conduct of his business.

To the Editor:—First of all, consider carefully whether or not the danger is real, and if so whether its importance has been exaggerated or underestimated. A merchant has answered this question in a magazine article which recently appeared. He must be a Yankee, for he answers one question with another. Here it is: "A few years ago we heard a terrible howl about the department store. Where are the leather lunged men who made such a howl about the department store? They are gone where the mail order howler will go—into oblivion."

Improved Business Methods.

He then goes on to point out how the department store force has improved business methods as no other force could have done; how it has made the local merchant "sit up and look"; how it has taught modern ideas of merchandizing—all of which is true. Still, it is granted that the department store brought with it a business condition which had to be squarely met, **and it was met. Local merchants did not run away from it, nor sit down and wait for it to run away with them. They studied the condition and profited by it.** The trade papers helped them by publishing comprehensive articles on the subject, and pointing out the good points and the bad. Even 10 and 12 years ago *The Iron Age* was printing articles of this nature, and in one of them excited considerable comment by strongly urging the local merchant to stand his ground, study his opponent, adopt those of his methods which were good and **FIGHT THE DEVIL WITH FIRE.**

But it was not meant that the fight should be vindictive or unfair; rather the opposite—square, upright and straightforward—and so it was in most instances, especially among the most progressive and successful class of local merchants. Every department store owner is in business to make money, and he is obliged to accomplish his aim in the face of tremendous expense, which in many cases is far out of proportion to any advantage in buying which his size and capital can command. The local merchant knew this at the beginning. It is now pretty well known by the buying public in general.

Mail Order System.

The department store makes its profit by its system and method. Frequently there is as great a margin of profit upon the "special bargains" as upon the regular merchandise, but these "bargains" are nearly always exceptional value for the customer, nevertheless. **The secret lies in the buying, and this is a broad highway open for the free travel of all merchants alike. Remember the saying of our grandfathers, "Well bought, half sold."**

The methods of the mail order houses are almost parallel. The cases are identical in the fact that they have far greater percentage of expense to overcome than do the local merchants. It has been said that they buy on the average only 5 per cent. cheaper than the retailer, while their printing, advertising, rentals and salary items are enormous.

All May Be Energetic and Progressive.

They are energetic and progressive, but there is no patent on these business qualities and it is therefore strictly up to the local merchant to show a similar amount of "get there" in his respective sphere. **The methods of mail order competition have their good points as well as their bad, and the local merchant should make use of the same policies wherever he can conscientiously do so.**

The principle of throwing out leaders or bargains is identically the same in the mail order house as it is in the department store, except that the one aims to get mail replies while the other strives to get the people into the store. In both cases these leaders are used as a means to sell other goods, the one by showing other goods attractively in a catalogue, the other by showing them in the store. **Every local merchant should by this time be sufficiently familiar with this phase of modern business to take advantage of it intelligently.**

Would Parcel Post Prove Disastrous to the Local Man?

Now, allowing that parcel post were an established fact, which it is not, and may never be, to what great disadvantage would it place the local retailer in his competition with the mail order houses? The usual answer is well known: It would permit the mail order houses to deliver goods in the rural districts at much lower cost than at the present time. Faced squarely, would that be a great disaster? What would the energetic local merchant be doing at the same time? Couldn't he send his

goods in the same way? **Couldn't he deliver quicker, and when occasion arose, knowing his trade, couldn't he send goods on approval for examination, possibly even for comparison with the mail order goods themselves.**

What Is Being Done?

What are the local merchants doing in anticipation of the possible enactment of a parcel post law? Are they making best possible use of the facilities now at their command? In nearly every rural community there are established local stage routes whose proprietors are glad to carry packages and printed matter for a nominal fee and information for nothing. The latter adds to their popularity with the farmers along their routes.

Even under existing conditions it costs only a small sum to circularize a wide territory by mail, and the local merchant can obtain most of the necessary printed matter for nothing from manufacturers. Verily, they ought to be in the mail order business themselves.

EMPIRE STATE.

What's in a Name?

What Is Made Prominent In the Window Display—the Firm or the Idea?

To the Editor: It can be stated with small prospect of contradiction that, in the feminine mind, the topic of millinery adornment is decidedly uppermost, both as to position and point of interest. Possibly never before has there been presented to the Hardwareman such an opportunity for advertising possibilities as the fashion in millinery, which has prevailed for a year or so. The shapes suggest a number of articles carried in stock in every Hardware store. So forcible is this suggestion that no company or single individual can lay claim to being the originator, as almost simultaneously in different parts of the country the idea of displaying Hardware in the guise of women's headgear has been used, particularly in window displays.

BUT the window trimmer often becomes so much engrossed in making his display attractive that his ingenuity in selection and arrangement blinds him to this most important point—namely: **Window advertising is of little value unless the name of the firm is as firmly fixed in the mind of the observer as is the uniqueness of the display. There is often too much idea and not enough firm name.**

CALIFORNIA.

Range Bidding Contest.

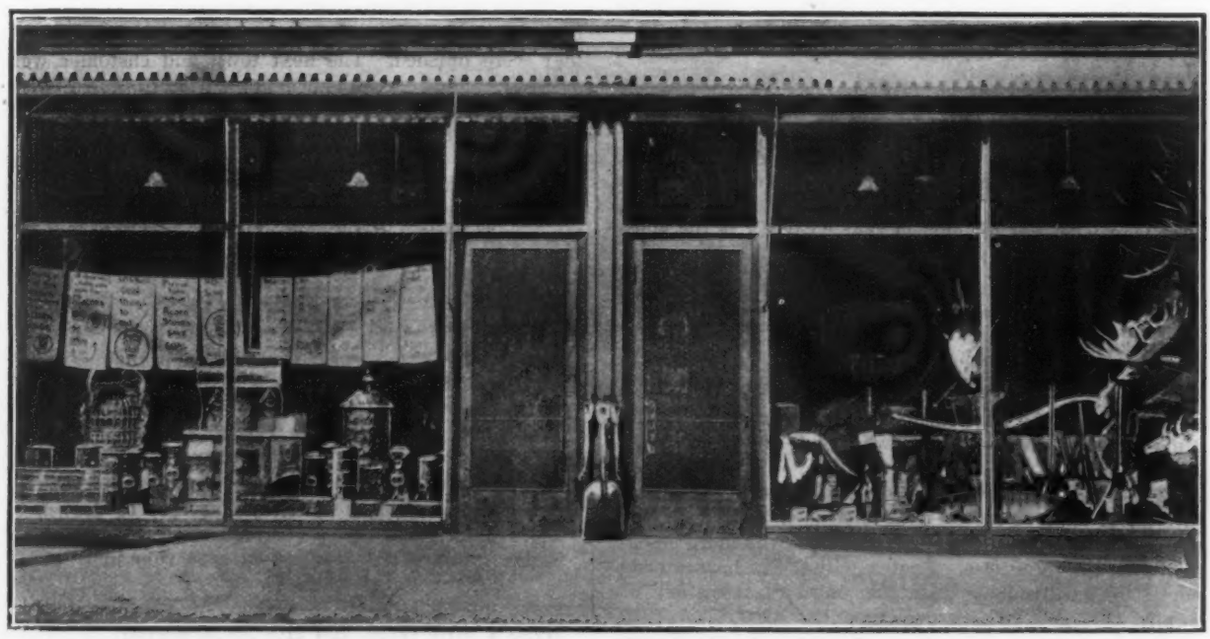
Lots of Publicity Secured and Sales Effected in Stoves as Well as Other Lines.

A NOVEL and successful method of advertising the store and developing business, especially in the Stove department, was recently employed by H. L. McNamara, Janesville, Wis. The public was invited to bid on a handsome Range which was exhibited in one of the show windows. These bids were recorded as made and each bid was put in an envelope, which was sealed and then dropped into a box especially provided for the purpose and locked securely. On the date advertised for the contest to close the box was opened and the bids carefully canvassed. The Range was awarded to the highest bidder whose offer was first disclosed.

As a result of this method of publicity the names of a large number of persons who were evidently considering the purchase of a Range were obtained, and these were followed up by sending them attractive Stove literature issued by manufacturers, together with a personal letter phrased to suit each individual case.

When the bidders on the Range entered the store they were shown the entire line, both heating and cooking, and a number of sales of Heaters were thus effected.

The Range which was the subject of this contest is shown in the left hand window of the accompanying illustration of the store front. At the same time advantage was taken of the opportunity to decorate the other window in an unusually attractive manner. This was arranged with Guns and Ammunition, and from a friend Mr. McNamara borrowed the contents of his den, consisting of a fine specimen of a moose's head, a deer, a mountain sheep, a rattlesnake, an Indian canoe and some antiquated Firearms. This exhibit attracted so much attention from the public that the sidewalk was impassable at times.



The Window Front of H. L. McNamara's Store at Janesville, Wis.—Ranges and Heaters and Curios in the Sportsman's Line Shown.

THE partnership formerly existing under the style of the Gilbert Hardware Company, comprising D. W. Gilbert and H. G. Stevens, Dublin, Ga., has been dissolved by mutual consent. Mr. Stevens will assume all liabilities and collect all assets. Owing to the ill health of Mr. Gilbert the business has been conducted under the management of his partner for the past two and one-half years, and he will continue it under the same style. It is intended to incorporate the company with a paid up capital stock of $30,000.

The risk attending want of success is not to be compared with that of neglecting the attempt.
—Bacon.

Keeping in the Public Eye.

Not long ago the head of a large department store—an establishment of national reputation—was asked what he believed to be the proper distinction between old time "store keeping" and "modern merchandising."

"Well," said he, "storekeeping looked only for a chance to make a sale and pocket the profit. Modern merchandising recognizes the existence of such a thing as human nature and adapts itself to it. Its function is mainly one of service and it aims to get the continued trade of its patrons. Consequently, modern merchandising reaps dollars of profit where storekeeping reaped cents."

There is, of course, a certain degree of exaggeration in a statement of this kind. Nevertheless it affords a great deal of food for reflection.

Modern merchandising makes a study of human nature. Let us therefore see what element it is in human nature which the progressive merchant should understand and avail himself of.

As nearly as we can figure it out that element is the inborn demand and love of all mankind for variety. The man who first announced that "variety is the spice of life" struck the keynote of the situation.

If you would keep your store constantly "in the public eye," you must feed the public on a diet of variety.

One stunt won't last forever. Neither will a series of stunts all along the same line do the work.

There must be an element of "differentness" all the time to make people wonder what you are going to do next.

This does not necessarily mean a whole lot of expensive advertising. Neither does it mean a large outlay of money in other ways. A little brain work is more essential than anything else. Brains without money can accomplish much more than the opposite condition of affairs.

Your reputation, in so far as it is independent of your personality, depends upon your store.

Your store has two sides—an inside and an outside. People see both sides, but it is only those who eventually see the inside who become your customers.

The problem of the merchant is therefore to make the outside of his store so attractive that people will want to see the inside, and the inside so attractive that it will confirm the good impression made by the outside.

When a man goes into a store he usually expects to make an inquiry or buy something. Hence, the chief aim in the interior arrangement should be to present the stock attractively and have it clean and well arranged, so as to make it as easy and convenient as possible for the transaction of business.—*Hardware Hints.*

Looking the Part.

First impressions are really impressions. When a man enters your office you form a subconscious opinion of that man the instant you glance at him. Frequently, if his personality aside from his appearance is favorable, if his methods of approach or of arousing interest do not antagonize you, he may be able to overcome the unacknowledged prejudice his appearance caused; but how much easier to break the ice, how much time saved, how much stronger the slight tie created, if every impression had been positive, had been favorable, instead of one neutralizing the other to ever so slight a degree.

Walk through this office, into the factory, into the stockrooms, into the plant, see the clerks with hats off, neatly and fittingly clothed, alert, they look the part, they are a part of the scheme of the house.

Go into another factory. The foreman lounges against the wall, his street hat on his head in the middle of the afternoon, giving his orders in a do-it-or-get-out sort of a way. He may be capable, he may be a high class man, he may be a comer, but he don't "look the part."

A man may have merit and still not "look the part." Why not avail yourself of both these adjuncts to success?

It simply requires the thought and care of your personal self that you owe to yourself and to those whose lot is cast with you in the business place or in the home.

Don't overdo it. In this case, sins of commission are greater than sins of omission. Don't be a fop, a featherhead; walk and look like a man.

Can you afford to sacrifice anything, any detail, no matter how seemingly trivial or insignificant, that has bearing on your personal success in your chosen line? I don't believe you can.—*Geo. W. Wilkie.*

Stick to the Sale.

In my own practice in selling I have never been in a hurry. I never got through with a town and a firm until they were finished. The next town and customer were not in my mind until I had finished with the town where there was a prospective order. Many of our salesmen fail because they are anxious to "make" certain towns and keep up with their schedule, leaving something that is good for something that is prospective. Stick to the sale until it is made, and make friends by sticking to it.—*From a Traveling Salesman's Letter.*

Keep Your Grit.

Hang on! Cling on! No matter what they say;
Push on! Sing on! Things will come your way.
Sitting down and whining never helps a bit;
Best way to get there is by keeping up your grit.

Don't give up hoping when the ship goes down,
Grasp a spar or something—just refuse to drown.
Don't think you're dying just because you're hit;
Smile in face of danger and hang to your grit.

Folks die too easy—they sort of fade away;
Make a little error, and give up in dismay.
Kind of man that's needed is the man with ready wit,
To laugh at pain and trouble and keep up his grit.
—The Booster.

THE SHARON HARDWARE MFG. COMPANY, Sharon, Pa., is completing the installation of a new electroplating department, so that it will, about December 1, be able to furnish its product to the trade in any desired finish. The company manufactures Window Lifts, Cupboard Butts, Regular Butts, Door Hangers, Strap Hinges, Screen Door Sets, Catches, &c.

THE Hardware store of T. J. Eberlee, Cattaraugus, N. Y., was recently gutted by fire. The stock was a total loss, but is fully covered by insurance. Mr. Eberlee has engaged new quarters and will put in a fresh stock at once.

THE SIMPLEX FILING DEVICE COMPANY, Canton, Ohio, has been incorporated with a capital of $125,000, by A. T. Stone, E. Van Den Vouver, C. L. Hunter, E. R. Probert and J. A. Jeffers.

Peddlers' License Law in Washington Sustained by the State Supreme Court.

Extracts from the Decision.

FOR about five years the Inland Empire Implement and Hardware Association, E. W. Evenson, Spokane, Wash., secretary, has been working on a legislative measure having for its purpose the licensing of peddlers of Steel Ranges, Vehicles and other merchandise. The effort has been to secure the passage of a law that on test would be sustained by the courts of Washington. This has finally been accomplished. At the last session of the Legislature a law was put on the books which has been found to meet legal requirements.

Arguments in regard to the new law were heard by the Supreme Court on September 28, and a decision was handed down on the 16th ult. upholding this act of legislation. Among other provisions of the law are the following:

Definition of Peddler.

Sec. 1. The term peddler for the purpose of this act shall be construed to include all persons, both principals and agents, who go from place to place and house to house, carrying for sale, or offering for sale or exposing for sale, goods, wares or merchandise: *Provided*, That nothing in this act shall apply to peddlers in agricultural or farm products: *And provided further*, That nothing in this act shall apply to peddlers within the limits of any city or town which by city ordinance regulates the sale of goods, wares or merchandise by peddlers: *And provided further*, That nothing in this act shall apply to venders of books, periodicals or newspapers.

Licenses.

Sec. 3. Every peddler, whether principal or agent, shall, before commencing business in any county of the State, make application in writing and under oath to the County Treasurer for the county in which he proposes to make sales for a county license. Such application must state the names and residences of the owners or parties in whose interest said business is conducted, and shall state the number of horses and vehicles to be used by him, and at the same time shall file a true statement under oath of the quantity and value of the stock of goods, wares and merchandise that is in the county for sale or to be kept or exposed for sale in said county, and shall at the same time make special deposit of $500 with the County Treasurer aforesaid, and shall pay the said Treasurer the county license fee as follows:

1. Peddler on foot, $100.
2. Peddler with one horse and a wagon, $150.
3. Peddler with two horses and a wagon, $250.
4. Peddler with any other conveyance, $300.

The county treasurer shall thereupon issue to said applicant a peddlers' license, authorizing him to do business in the county aforesaid for the term of one year from the date thereof: *Provided*, That the license issued under and by virtue of this act shall expire by limitation on the second Monday of January succeeding the year of which said license was issued. Every county license shall contain a copy of the application therefor and shall not be transferable, and shall not authorize more than one person to sell goods as a peddler, either by agent or clerk, or in any other way than his own proper person.

Liability of Deposits.

Sec. 6. Each deposit made with the county treasurer of any county in this State shall be subject to all taxes legally chargeable to same, to attachment and execution on behalf of the creditors of the licensee whose claims arise in connection with the business done under his license, and the treasurer may be held to answer as trustee in any civil action in contract or tort brought against any licensee, and shall pay over, under order of the court or upon execution, such amount of money as the licensee may be chargeable with upon the final determination of the case. Such deposit shall also be subject to the payment of any and all fines and penalties incurred by the licensee through violations af the provisions of the preceding sections, and which shall be a lien upon same and shall be collected in the manner provided by law.

DECISION OF THE COURT.

The decision of the court, which is concurred in by six judges, is as follows, in part:

Classification of Peddlers.

Learned counsel for the petitioner contends that this law is repugnant to section 12 of article I of our State Constitution, which provides "No law shall be passed granting to any citizen or class of citizens . . . privileges or immunities which upon the same terms shall not equally belong to all citizens," and is also repugnant to the fourteenth amendment of the Constitution of the United States, which in substance secures the same equal rights.

And it is argued that, since privileges and immunities are by the terms of this law granted to peddlers of agricultural products, books, periodicals and newspapers, which are withheld from peddlers of other articles, by exacting a license fee from the latter and not from the former, such privileges and immunities are therefore not accorded to all upon the same terms.

This argument is based upon the assumption that all peddlers are necessarily in the same class, and that the Legislature has no power to recognize sub-classes within the general class, but must grant privileges or immunities to or withhold them from all peddlers alike. It may be conceded that the discrimination between the classes must rest upon some reasonable ground of difference, and that such difference must have some relation to the business and not be a mere difference in the persons placed in the respective classes or sub-classes, which is entirely foreign to the business, such as a difference in citizenship or a difference by reason of previous military service.

In all such cases it will be noticed the difference used as a basis for classification has no more relation to the business or proper purpose of the legislation than if it were a distinction based upon a difference in the color of hair or eyes of the persons sought to be put into the different classes. In the case of Lasher vs. People, 183 III, 47 L. R. A. 802, where commission merchants dealing in certain farm products were required to be licensed, while those dealing in certain other farm products were exempt from the law, the court said:

> It is first argued that the statute is invalid as discriminating between commission merchants, because it excepts those who deal in grain, live stock and dressed meats. The claim is that produce commission merchants constitute a class and that the Legislature must require a license from all or none. This objection to the law is not valid. The Legislature have power to form classes for the purpose of police regulation, if they do not arbitrarily discriminate between persons in substantially the same situation. The discrimination must rest upon some reasonable ground of difference, but the classification in this case is a natural one. The commission merchants dealing in the kinds of produce named in this act, which constitute the small products of the farm, are of a different class from those who transact business in the great markets for the sale of grain, live stock and dressed meats.

The Legislature having exempted from the operation of this law peddlers of agricultural and farm products, and venders of books, periodicals and newspapers, thus placing them in a different class from other peddlers, we do not think it can be said that such a classification is wholly without reason and foreign to all legitimate purposes of the legislation.

Reasons quite satisfactory to some minds could be advanced for exempting peddlers of farm products from a license law, and the same can be said of venders of books, periodicals and newspapers; while, on the other

hand, there may be room for argument to the contrary. We refer to reasons and arguments relating to some legitimate purpose of the law. The very fact that there is room for honest difference of opinion in this respect shows that it is a question of policy and not of power in the Legislature to pass the law.

We are of the opinion that a license law such as this, whether its object is regulation or revenue, is not a grant of privileges or immunities to a class of citizens which upon the same terms do not equally belong to all, because it classifies peddlers with reference to the different kinds of goods they sell.

City and Town Peddlers May Be Exempted

It is urged that the law discriminates arbitrarily and without reason between peddlers in cities and towns and elsewhere in the State, by exempting the former when their licensing is regulated by ordinances of such cities and towns. Like the other classification we have noticed above, it seems to us this is a question of legislative policy. As a revenue measure the Legislature is certainly authorized to delegate the power to cities and towns and suspend the operation of the law there, when such cities and towns act on the subject, and it is not necessary to the preservation of equal rights that the police power of the State should be exercised by uniform regulations all over the State. Classification of the people of different localities with reference to population, or with reference to cities and towns, is within legislative discretion.

Varying License Fees.

The law is also assailed upon the ground of the unequal license fees exacted from peddlers by reason of their different modes of travel and conveyance of their goods in reaching the public. That such a classification for the purpose of measuring the license fee is not an unwarranted basis of discrimination is pointed out by the very pertinent language of the Supreme Court of Wisconsin, in Servonitz *vs.* State,—Wis.—113, N. W. 277:

> No reason which appeals very strongly to our judgment is advanced why peddlers should not be classified as in the law in question, according to their facilities for going from place to place and carrying their wares. The perils to be guarded against in respect to the occupation and the contributions that may reasonably be required to the public revenues, strongly suggest, if they do not demand, such classification. Certainly the Legislature, within the boundaries of reason, may well have thought that a person traveling about the country plying the vocation of a peddler with an equipment consisting of a span of horses and a wagon, should, both as a matter of police regulation and taxation, pay a greater license fee than a person plying the same trade but traveling on foot from place to place. Not because the former would be more liable to be dishonest than the latter, but because of the greater opportunity and liability thereof in the one case than in the other, and the corresponding greater liability in the one case than in the other of the harm if committed, being difficult of redress or going entirely without remedy; again, not because the person, as such, traveling with a team should be taxed more than one traveling on foot, but since the one in all reasonable probability would conduct a much greater business than the other, the tax exaction should bear some practical relation thereto.

There would be some ground for contending that the fee charged for the license is excessive if the law be regarded only as a police regulation; but we see no reason for imputing to the Legislature an intention other than to exercise both the police and taxing power in its passage.

This view of the law was entertained by Judge Hanford of the Federal Court of this district, in ex-parte Crowder, 171 Fed. 250, where it was held the law did not violate the equal rights provisions of the State or National Constitution, either in its discrimination between the classes it recognizes, in the excessiveness of the license fee, or in the other conditions imposed.

Does Not Violate State or National Constitutions.

We are of the opinion that the law does not violate any rights guaranteed by the State or National Constitutions, and that petitioner's prayer for the writ should be denied. It is so ordered.

Price-Lists, Circulars, Etc.

Manufacturers in Hardware and related lines are requested to send us copies of new catalogues, price-lists, &c., for notice in this column and for filing in our Catalogue Department.

TURNER & STANTON COMPANY, Norwich, Conn.: Illustrated catalogue and price-list relating to Picture, Shade and Upholstery Hardware, Picture Wire and Shade Cords, Coat and Hat Hooks, Spool Wire, Clothes Lines, Bicycle Lacing, Nets and Valve Wire, Tire Lacing, Bright Wire Goods, Corner Irons, Wrought Iron Mirror Hooks, Picture Chain, Jack Chain, Picture Hooks, Drawer Handles, Extension Sash and Curtain Rods, &c. The company makes special goods of all material to order or to specifications.

U. J. ULERY COMPANY, 25 Warren street, New York: Catalogue No. 6D, devoted to a line of Napanoch Pocket Knives. These are illustrated, with prices, from Hunting Knives 5⅜ in. long to fine Pen Knives 2⅝ in. long, in some 400 patterns. The goods are spoken of as a white man's Knife with a red man's name, and of high quality. Nail Files, Erasers, Knife Purses, Pocket Knife tool kits and the Victor Chopper are also shown.

UNITED STATES TOOL COMPANY, Vincennes, Ind., with Eastern factory at Pittsburgh, Pa.: Catalogue H, illustrating Coal Drilling Machines, Rock Drills, Breast Augers, Miners' Tools, Lamps, Caps and supplies.

COLT'S PATENT FIRE ARMS MFG. COMPANY, Hartford, Conn.: Illustrated catalogue describing the company's full line of Firearms and giving concise directions for practice, classes of arms, sizes of targets and other information of value, including a photographic reproduction of the various cartridges adapted to the different Revolvers and Pistols described.

SILVER & Co., 304-314 Hewes street, Brooklyn, N. Y.: Catalogue No. 15, relating to artistic Bath Fittings, including Glass Towel Shelves, Towel Bars, Mirrors, Medicine Cabinets, Combination Fixtures, Bath Sprays and Seats, &c. Catalogue No. 17 is devoted to House Furnishings, Covering Coffee Pots and Urns, Roasting Pans, Bread Pans, Potato Mashers, Presses, Coffee Mills, Egg Beaters, Bread and Cake Boxes, Spice Boxes, Alcohol Stoves, Serving Trays, Oil Stoves, Oil and Gas Heaters, &c.

BUFFUM TOOL COMPANY, Louisiana, Mo.: Section G of its first general catalogue. It is 7 x 10 in. in size, 32 pages, with illuminated paper covers, and comprises price-lists, descriptions and illustrations of the line of Plumbers' Tools made by the company.

S. & I. COMPANY, Springfield, Mass.: Catalogue No. 1 of Never Break brand Tools, including Drawing Knives, Socket Chisels, Cold Chisels, Screwdrivers, Ice Picks, Scratch Awls, Plumb Bobs, Nail Sets, Center Punches, Prick Punches, Solid Punches, Pin Punches, Cotter Pin Extractor and Spreader, Bit Stock Reamers, Screwdriver Bits, Box Scrapers, Combination Pliers, Cabinet Scrapers, Key Hole and Compass Saws, Hand Panel and Rip Saws, Nests of Saws, Hack Saw Blades and Frames, Nail and Tack Pullers, Mason Fruit Jar Sealer and Opener, Sash Cord and Weight Fasteners.

W. E. CALDWELL COMPANY, Louisville, Ky.: Catalogue devoted to Wooden Tanks, Hoop Lugs or Fasteners, Towers, Water Works for country homes, Fancy Conical Tank Covers, Steel Tanks, Balanced Float Valves and Railway Tank Fixtures.

PIKE MFG. COMPANY, Pike, N. H.: Private mailing card, upon the reverse side of which, illustrated in colors, are five specialties recently added to the line.

R. W. WHITEHURST COMPANY, Norfolk, Va.: Circulars illustrating four and six arm Hose Reels; also three Step Ladders of different grades.

D. Baughman & Son have engaged in business in Joseph, Ore., handling Shelf and Heavy Hardware, Stoves, Tinware, Window Glass, Paints, Oils and Sporting Goods.

Going After Christmas Trade.

Santa Claus Window with Umbrella as Centerpiece.

BY FLEMINGTON.

PROCURE a large umbrella, such as is used on wagons for protecting the driver from the sun and for advertising purposes. Open it up and secure it in an upright position by putting the handle in a Christmas tree holder, or boring a hole in a board fastened to the floor of the window. Cover the open umbrella with cheesecloth previously treated to a coat of paste and snow sparkle, after which with black ink lay out upon it the degrees of latitude and longitude. On top place a tiny American flag indicating the North Pole.

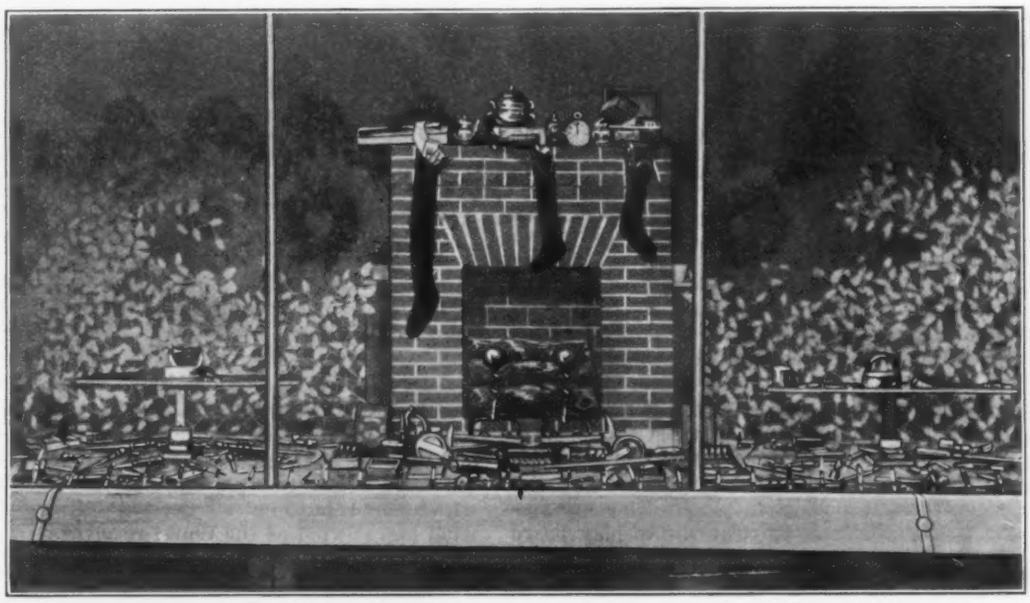
As just starting from these northern regions have Santa Claus in a toy sled loaded with presents and driving a chain of reindeer (which may be cut out of brown cardboard if the figures cannot be obtained) partially encircling the top of the globe and heading straight for a chimney top protruding through the snow covered surface of the umbrella or top crust of the earth's surface.

Build a fireplace below and run chimney from the floor up. Fireplace and chimney may be made out of pressed brick or easily imitated. Fasten to the mantel a child's stocking stuffed with gifts, with all sorts of other presents spread out on the floor.

A background for the chimney is made by pinning strips of handsome wall paper, extending from the lower back edge of the umbrella down to the floor of the window. This will form a semi-circular back.

Get a doll whose eyes are closed when lying in a reclining position and place in a toy bed arranged on the floor in front.

On the floor of the window at one side place a large card elevated just enough to be readable and not interfere with the view. The wording may be something to the effect of the card reproduced herewith.



A Holiday Window Trimmed with Green Cedar and Frosted Holly. The Fireplace Forming the Center of the Display Made an Attractive Background.

HOLIDAY HARDWARE

On the INSIDE
Our Store Looks Like
DREAMLAND
Even to the
GROWN-UPS

A CHILD'S DREAM
the night before
CHRISTMAS

☞ Don't Disappoint
the CHILDREN

A Pacific Coast Holiday Window Display.

THE window shown herewith represents a display of holiday goods during the last Christmas season in the store of the Ernst Hardware & Plumbing Company, Seattle, Wash., as arranged by S. E. Kerney. The fireplace was made of heavy dark red paper, striped with japalac to represent bricks. Andirons supported logs on which strips of colored paper were tacked and kept in motion by a fan located beneath the logs, which fairly well resembled fire.

Lattice work on either side of the fireplace was covered with frosted holly. The lattice work was set about 16 in. in front of a dark red background, which was draped with strings and wreathes of green cedar. Three stockings, a woman's, a boy's and a man's, were suspended from the mantel shelf, filled with suitable presents for each. The shelf also accommodated holiday articles.

The floor was covered with holly crepe paper, on which a large assortment of Mechanics' Tools and Cutlery was laid. In front of the lattice work pedestals supported glass shelves, on which were placed Shaving Mugs, Razors, Shear Sets, &c. A pot of mistletoe was stood on the posts at either side of the fireplace.

Moving Exhibits of Chisels and Auger Bits.

Ingenious Arrangements Devised by the Simmons Hardware Company.

MOTION in the show window is nowadays quite frequently employed to attract the attention of passers by. Very ingenious and effective examples of this in connection with the display of Chisels and Auger Bits are reproduced herewith, being features of an exhibit made by the Simmons Hardware Company, St. Louis, Mo., during last year's convention of the National Retail Hardware Association, and also during the St. Louis Centennial recently celebrated. The illustrations give an idea of the method by which the movement was secured.

The Chisel Exhibit.

In the Chisel exhibit there were 16 Chisels, which revolved so as to show one side for a few seconds, and then the other side for a similar period, this action being kept up continuously. Only the Chisels were visible to the pedestrian on the sidewalk, the mechanism being concealed behind the display board, in which was an opening through which the operating strings passed. Cross pieces attached to uprights at each end were required to hold the Chisels in an upright position. Wire Cornice Hooks were screwed into the lower cross piece at appropriate distances apart, and holes in the end of the Chisel Handles received the short end of the Hooks. On the upper cross piece a brass knee, having a semicircular opening in its outer end, was fastened immediately above each Screw Hook. The shanks of the Chisels were placed in the openings in the knees, with a fine wire around each Chisel to hold it in place. This arrangement permitted the Chisels to clear the display board when revolving, or if considered more desirable, the Screw Hooks and knees could be attached to the display board.

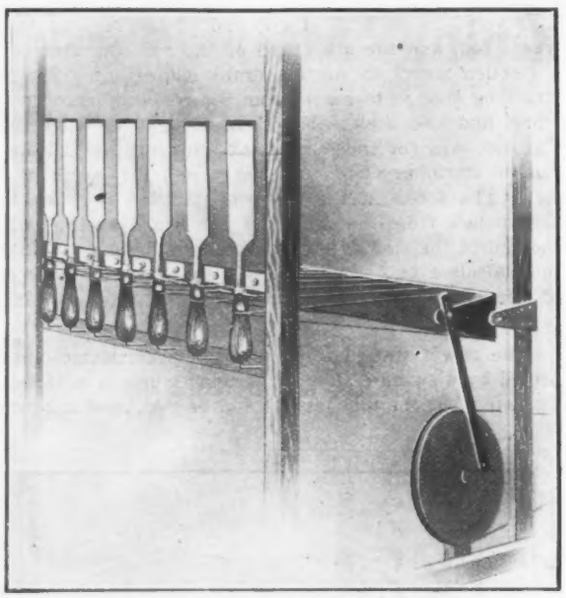


Fig. 1.—Window Display of Chisels that Revolved so as to Show One Side for a few Seconds and then the Reverse Side, this Action Being Kept Up Continuously.

About 12 in. back of the display board was a piece of board pivoted in the center of the ends, so that it was free to rock back and forth. A piece of Fish Line was wound around each Chisel Handle, just below the socket, and the ends fastened to the top and bottom of the rocking board. Each line was fastened to the Chisel Handle with a small Tack, but the line was left so that it would wind and unwind as the Chisel revolved.

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Pivoted to an arm at one end of the rocking board was a rod, and the lower end of the rod was pivoted to a wooden wheel to form a crank movement. The rod was long enough to reach from the rocking board to the wheel and had a slot about 7 in. long in its upper end. The slot was for the purpose of allowing the Chisels to remain stationary while the rod passed the length of the slot. The screw at the lower end of the rod was just far enough from the center of the wheel so that when the end of the slot struck the screw in the arm it turned the Chisels a half revolution. Then when the other end of the slot struck the screw it caused the Chisels to rotate back.

The power was obtained from an electric motor connected by a twine belt. The wooden wheel was 16 in. in diameter, but the diameter should be regulated according

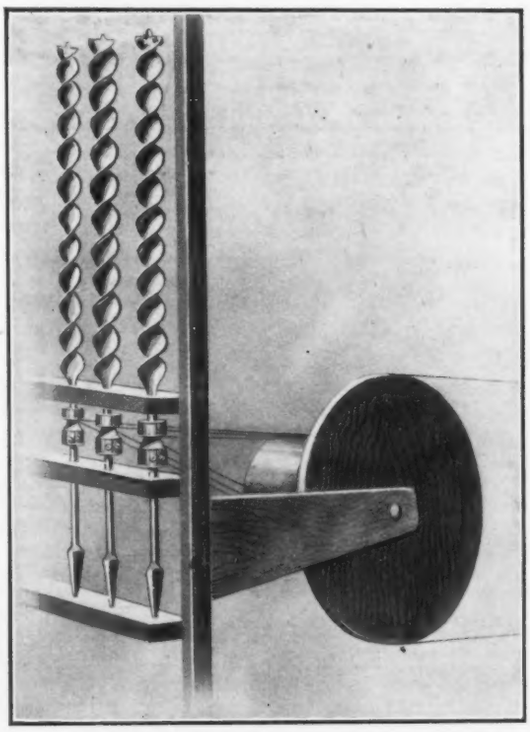


Fig. 2.—Window Display of Moving Auger Bits Which Appeared Endless, Owing to the Reflection of Light on the Twist of the Bits.

to the speed and size of the wheel on the motor. The wooden wheel should not make more than 12 rev. per min.

Auger Bits in Endless Display.

In the exhibit shown in Fig. 2 the Auger Bits appeared endless because of the reflection of light on the twist of the Bits. The upright in the illustration represents the show board, which was covered with black broadcloth, so that the cross pieces and Bits were the only portions of the exhibit which showed from the sidewalk.

The Bits were 4 ft. long, their lower ends resting on the lowest cross piece. The two pieces of wood through which the Bits passed were each ½ x 2 in. in size. Holes a trifle larger than the shanks of the Bits were bored in the pieces, which were afterward split through the center of the holes, the Bits put in place and the pieces fastened to the show board with screws. Care was taken to leave the Bits so they would revolve freely. Wooden spools, turned as shown, were attached to the shanks of the Bits by screws.

Back of the show board, attached by an arm, was a pivoted roller about 6 in. in diameter, with a driving wheel on the end. An opening was made in the show board through which the cords passed that encircled the spools and roller. The drive wheel was belted to a small electric motor, which caused the Bits to revolve.

A New Range for the Thanksgiving Dinner.

Using the Holiday to Increase Sales of Stoves and Other Goods.

BY C. F. W.

THE children of any community will help the merchant move some of his Stove stock if he will give them the pleasure of looking over an unusual display and telling the home folks all about what he is doing. Have the local printer get up a placard in large type to put in the show window, reading something like this:

You Need a New Range
to Cook
Your Thanksgiving Dinner
Without Spoiling It.

The little folks can read that sign and will be anxious to avoid any such calamity at their homes, and their apparent fear will be all that is necessary in some homes to bring about the purchase long needed.

If two show windows are available the other window may have a placard saying:

One of Our New Sitting Room Stoves
Will Start a Thanksgiving Day Comfort
That Will Last All Winter.

Put the kind of Range in the first window that you want the people to buy. Festoon your windows with strung cranberries, bunches of white onions, a few turnips, a big pumpkin, a bunch or two of celery.

If you sell Roasting Pans leave the oven door open so that the Roaster can be seen and make a card with a hand pointing to the Roaster bearing the statement, "The Turkey Is Inside."

Burn a candle or some other kind of light in the fire chamber of the Stove so that it will look as if it had a fire in it. Show some Fire Shovels, Coal Sifters, Pokers, Pudding Pans, Pie Plates and other kitchen equipment that should be renewed.

Display the Heating Stove that is going to give comfort all winter on a neat Stove Board, with an attractive Hod full of coal at one side and a Hammered Brass Wood Box or other equipment used in the sitting room. By all means have a strong light in the Heater, even if you have to use a lantern.

It might be well to keep a couple of kittens in the window during the display to make the children talk, and if care is taken to feed them milk at a time the children are going home from school it will be sure to be talked about freely.

If arrangement is made to give these children a circular of the Cook Stove and the Parlor Stove they certainly will be taken home to the people who do the buying and will go a long way toward bringing attention to the enterprising tradesman, who may be able to derive profit from more than one thing that the fathers and mothers may need besides a Cooking or Heating Stove.

EDWIN S. HILLS, Plainville, Conn., manufacturer of Hames and Hardware Specialties, died suddenly in New York, November 10, aged 67 years. He was a native of Plainville. His father, Hiram Hills, established the business of making Iron and Wooden Hames and carried it on for many years, being succeeded by his two sons, Edwin S. and the late Burritt Hills. Three years later the former bought out his brother and continued the business until his death. He also manufactured a number of specialties, his own inventions. He was an organizer and vice-president of the Plainville National Bank and was a member of the last General Assembly. He leaves a widow, a son and a daughter.

Hardware Merchants' Letterheads.—II.

ANOTHER group of out of the ordinary letterheads used by retail Hardware merchants is given herewith. These are, perhaps, a more pleasing and attractive collection than the one presented in our last issue, and one of them is given solely on that account and not for any characteristic or novel phrase or sentiment which appears in connection with the description of the business.

Another Way of Saying "If It's Hardware We Have It."

A Florida Merchant's Platform.

This House is Evidently Ready to Go the Limit to Please and Satisfy Its Customers. The Motto Might be Made a Little More Prominent.

An Artistic Letterhead in Which the Different Lines Handled by the House are Enumerated.

Requests for Catalogues, Etc.

REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate:

FROM CHAS. RENO, who has purchased the business of G. W. Flemmons, Piedmont, Kan. A retail stock is carried of Shelf and Heavy Hardware, Stoves, Tinware, House Furnishings, Window Glass, Agricultural Implements, Paints, Oils, Sporting Goods and Harness.

FROM FITE-FERRELL HARDWARE COMPANY, which has purchased the business of the Bishop Hardware Company, Dalton, Ga., wholesale and retail, general Hardware, Sporting Goods, Tools, Cutlery, Roofing, Stoves, Tinware, Enameled Ware, Fencing, Buggies, Wagons and Plows.

FROM HARPER HARDWARE COMPANY, which is opening a store at Fort Worth, Texas. The company will carry a general line of Hardware.

FROM E. COADY & CO., who have opened a store in McLoud, Okla., carrying Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements and Sporting Goods. This is one of a line of stores to be opened in four counties in Oklahoma January 1, with general offices at 132½ West Main street, Oklahoma City, Okla.

FROM GALVESTON HARDWARE COMPANY, Galveston, Ind., carrying a general stock of Hardware, Implements, Buggies, Wagons, Surreys, Cream Separators, Machine Oils, Pumps and Pipe.

FROM ABINGDON HARDWARE COMPANY, which has been incorporated in Abingdon, Va., with a capital stock of $10,000, handling Shelf and Heavy Hardware, Stoves, Tinware, Sporting Goods, Window Glass, Paints, Oils and Agricultural Implements.

P. S. & W. Mechanics' Handy List.

THE Peck, Stow & Wilcox Company, 27 Murray street, New York, has just issued an illustrated, descriptive catalogue of 162 pages, entitled the "P., S. & W. Mechanics' Handy List." The prices printed are those at which any retailer may profitably execute orders for the goods covered. On a front page there are views of the company's factories at Southington, Plantsville and East Berlin, Conn., and Cleveland, Ohio. At the back are 32 pages of valuable information and reference tables, especially serviceable to mechanics. The goods shown for the most part are of the guaranteed quality branded P., S. & W.

THE representatives of 30 Hardware firms in western Pennsylvania met at a smoker at the Fort Pitt Hotel, Pittsburgh, on the evening of the 11th inst., and organized the Western Pennsylvania Hardware Men's Association, electing the following officers: President, Charles W. Scarborough; first vice-president, John F. Howe; second vice-president, William M. Scott of Carnegie; third vice-president, E. E. Lyon of Greensburg; fourth vice-president, Frank Brierly of Beaver Falls; secretary, W. V. Taylor; treasurer, Samuel McKnight. W. P. Lewis, secretary of the Pennsylvania Retail Hardware Association, with which the new organization will be affiliated, and J. Milton Cole of Henry Disston & Sons, Philadelphia, addressed the meeting.

THE Shovel plant of Beall Brothers, Alton, Ill., was completely destroyed by fire on the 8th inst. The company will rebuild at once on a much larger scale and expects to double the output of the former plant, which was about 200 to 250 dozen a day. The fire was confined entirely to the Shovel plant, and the other factories turning out Heavy Hammers and Railroad Track Tools and Mining Tools and Supplies were not injured or affected in any way.

American Glidden Two Point Barb Wire.

The standard Glidden Two Point Barb Wire, manufactured by the American Steel & Wire Company, Chicago, Ill., has in the past been ordered under various names, such as Joliet Glidden, Common Glidden, Pittsburgh Glidden, Genuine Glidden, &c. To do away with this multiplicity of names and establish a uniform brand, the company has adopted for this kind of barb wire the name of American Glidden, and the spools will be stenciled with this brand.

Plain, Stained or Japanned Handles.

The F. E. Kohler Company, Canton, Ohio, has a handle factory at Louisville, Ohio, about 7 miles east of Canton, where it manufactures all the handles used in its various lines of goods. The company is in a position also to supply handles, preferably small ones, and either plain, stained or japanned, to other parties.

Universal Percolating Coffee Machine, Six Piece Set, No. 506.

Landers, Frary & Clark, New Britain, Conn., New York salesroom, 302 Broadway, are offering the six-piece set percolating coffee machine shown herewith. In this, as in the other coffee percolators made by the concern, the process of making the coffee is completed before the water reaches the boiling point. When the heat is applied a jet of water, lukewarm at first, but quickly increasing in temperature as the pumping process goes on,

Universal Percolating Coffee Machine Set, with Creamer, Sugar, Flagon and Tray.

is forced up through a tube, falling on a spreader plate, by which it is evenly distributed over the coffee, through which it percolates down into the pot again. The pumping continues until the water reaches the boiling point, when water and steam together come up through the tube. The coffee is then ready to serve. The percolator illustrated is also made with a nine cup capacity. Six and nine cup machines are made in a number of styles. Machines of similar patterns are furnished without tray or other pieces.

The Maplewood Mills, Fall River, Mass., New York office 97 Warren street, F. W. Buckman, manager, manufacture the Excelsior Standard and Sanitary brands of absorbent cotton. It is put up in ½-oz. to 16-oz. cartons and in rolls of 1 lb. A line of absorbent cotton waste is also produced.

The Cushion Interchangeable Horseshoe.

The Giller Acme Horseshoe Company, 3513 Fort Hamilton avenue, Brooklyn, N. Y., has just put on the market the cushion interchangeable drop forged shoe and prier wrench shown in the accompanying illustrations. The principal feature of the shoe is that it is in two parts, a plate and a shoe, made in such a manner that the shoe part is interchangeable without removing the nails from the plate and hoof. In Fig. 1 the shoe is represented as it appears on the animal's foot. The two parts are separately shown in Fig. 2, the one on the left being the plate and that to the right the shoe. Four taper plugs are forged on the plate, that fit in corresponding taper holes in the shoe, and hold the shoe securely in place until it is pried off. The inner parts of the plates at both ends can be cut off diagonally to relieve pressure on corns. The plates are fitted and nailed to the hoof by a blacksmith or horseshoer in the ordinary way without, however, the necessity of burning the hoof. The plate is then readily attached by a few taps of a hammer. As occasion requires, the shoes are as easily removed by the owner or teamster with the aid of the prier wrench. The prongs of the prier are driven between the plate and the shoe, one on each side of one of the plugs, repeating the operation at each plug in succession, forcing the shoe off evenly. Fig. 3 shows the lower side of a sharp calk shoe and the upper side of a blunt calk shoe, the corresponding sides of both being the same. The upper side of the shoe, as shown, has depressions which come directly over the nail heads in the plates. It is pointed out that as the nails never touch the ground they are not worked loose in the nail holes of the plate, and the plate outlasts the regular style of shoe. The plate can be left on the hoof for two or three months, or until the hoof grows over it too much, and three or four shoes can be worn out on one plate. Space left between the plate and the shoe when in place on the hoof acts as a cushion and relieves the jar incident to hard pavements. The combined shoe and plate, of any size, is said to be lighter than the accompanying size of regular shoes. Among other points of excellence the manufacturer emphasizes the fact that blunt shoes can be changed for sharp shoes, or vice versa, according to the weather, in four or five minutes by the owner or teamster without the trouble or expense of going to a blacksmith or horseshoer.

Fig. 1.—The Cushion Interchangeable Drop Forged Horseshoe and Prier Wrench, with Blunt Toe and Heel Calks.

Fig. 2.—The Part to the Left Is the Plate and that to the Right the Shoe. The Plate Is Nailed on the Hoof and the Shoe Held in Place by Taper Plugs on the Plate, Fitting in Corresponding Taper Holes in the Shoe.

Fig. 3.—Views of Lower Side of Sharp Calk Shoe and Upper Side of Blunt Calk Shoe, Showing Depressions Which Come Directly Over the Nail Heads in the Plate.

Improved Modern Stool Chair, No. 11.

The Angle Steel Sled Company, Otsego, Mich., is placing on the market the stool chair shown herewith. It is made with high carbon angle steel legs and a 13-in. hard wood seat well shellaced and varnished. The chair is supplied with double braced adjustable back, made to raise or lower quickly from 10 to 16 in. It is explained that it conforms to the back of the user, so as to be comfortable. The chair is nicely finished in dark green enamel, in six hights, from 20 to 30 in. The chairs are suitable for use in department stores, factories and where confectionery and soda water are sold.

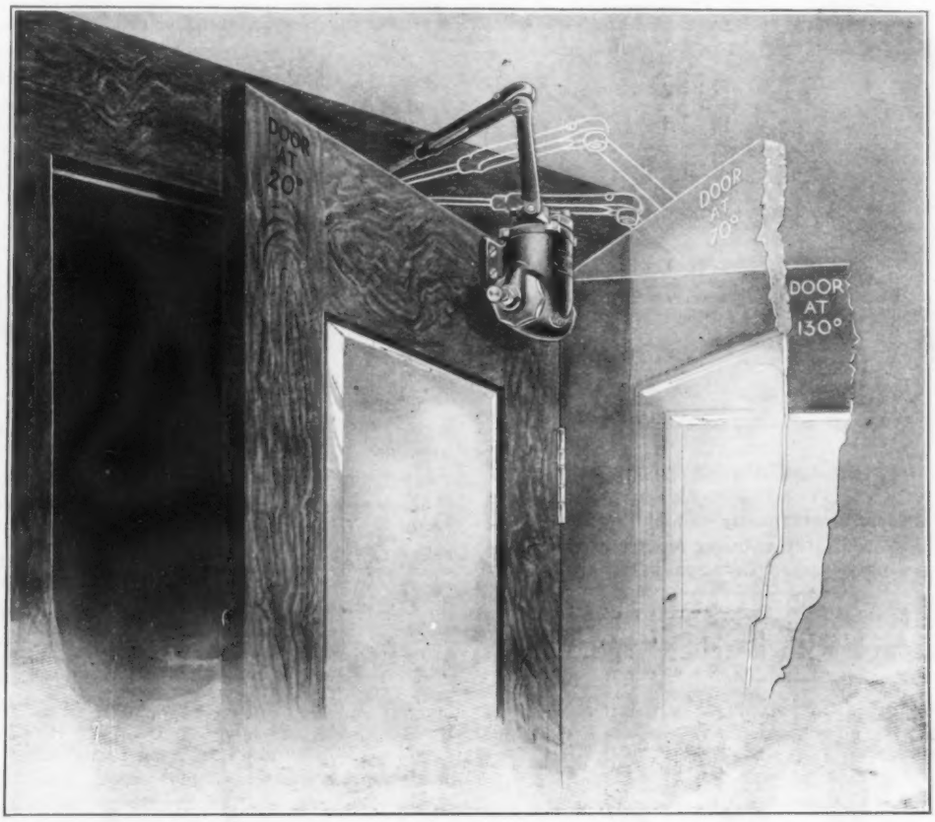
Improved Modern Stool Chair No. 11, with Double Braced Adjustable Back Made to Raise or Lower Quickly from 10 to 16 In.

Syracuse Hammered Copper Lamps.

In the description given in our last issue of the artistic metal work of the Syracuse Wire Works, Syracuse, N. Y., especial reference was made to their lamps. There was, however, a mistake in the description, as the lamps were referred to as "hammered *coppered* lamps," when they should have been designated as "hammered *copper* lamps." The company's work of this class is uniformly made of solid brass or solid copper.

The Russwin Combined Door Check and Holder.

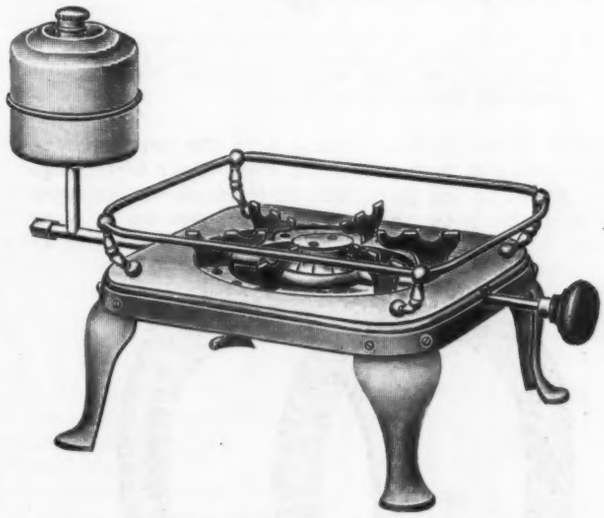
The Russell & Erwin Mfg. Company, New Britain, Conn., is putting on the market a new door check and holder which automatically holds a door open at angles of 20, 70 or 130 degrees, as desired, these three positions being shown in the accompanying illustration. This is accomplished by the addition of a simple and ingenious device to the Russwin liquid door check. The check is applicable to either right or left hand doors without reversing. The holding device is referred to by the company as having no complicated parts and as having nothing to get out of order, its action being described as simple yet positive. In adjusting the door it is opened to the desired angle, which until a person becomes familiar with the point, may be located by the holding dog suspended from the check or arm, and the door remains at that point until released. The device is recommended by the company for use in private houses, churches, offices or on doors which at times are to be kept open, either for the purpose of unobstructed passage or for ventilation.



The Russwin Combined Door Check and Holder, by Which Doors Are Automatically Held Open at Angles of 20, 70 or 130 Degrees.

Stoves for Denatured Alcohol.

Manning, Bowman & Co., Meriden, Conn., New York office at 25 West Broadway in charge of H. S. Mirrielees, have recently placed on the market a number of new alcohol utilities including gas stoves, chafing dishes, casseroles and a tourists' chafing dish. One of these groups of articles consists of alcohol gas stoves, serviceable anywhere, but specially constructed for hard service and for use aboard yachts, launches, motor boats, &c. The illustration shows one of the stoves with single burner. The framework is made of galvanized iron. The alcohol reservoir and guard rail are of brass. The dimensions of this stove are 10½ x 10½ in., and they are made both with and without guard rail and also in a style having black enameled as well as galvanized top. The black enameled style has fount, burner and legs nickel plated. The stove is 5 in. high and its extreme hight, including tank, is 11½ in. The same principles are incorporated in a two-burner and three-burner style, with and without guard rails. The two-burner stove is 20 in. long and 10½ in. from front to back. The three-burner style is 30 x 11½ in. The hight of both stoves to top of the burners is 5 in.; extreme hight, 11 in. One group is made with black enameled top with fount, burners and legs nickel plated. The other series, obtainable in both two and three-burner capacities, is in galvanized iron, to be used around salt water or in damp places. The two-burner and three-burner styles have long horizontal reservoirs for holding denatured alcohol, with a single center screw cap opening through which to pour the alcohol.



Stove with Guard Rail, Using Denatured Alcohol.

The Hart Mfg. Company, Unionville, Conn., is offering table knives and forks with hollow handles and tempered blades, in tin, nickel and silver plate, put up in rack boxes and highly finished. The handle is made in one piece and the shank, which is half the length of the handle, is fastened permanently. The goods are designed to take the place of scale tang work and are said to be more substantial.

Reamer Set No. 30 for Automobile Kits.

The reamer set for automobile kits shown herewith has just been placed on the market by the Cleveland Twist Drill Company, Cleveland, Ohio. The set consists of six taper pin reamers, sizes 0 to 5, mounted in a round wooden box, with a hand polished dark maroon finish. The cover screws on snugly, making the case 5 in. high and 2 in. diameter. The set is designed especially as a hand adjunct to automobile kits, but, it is explained, will be found of value wherever pin reamers are used.

Reamer Set No. 30 for Automobile Kits.

The Barnes Improved Windmill Force Pump Standard with Ratchet Head.

The Barnes Mfg. Company, Mansfield, Ohio, is offering the pump standard shown herewith for hand and windmill use. While the ratchet head greatly increases the leverage and causes the pump to work more easily in deep wells, it is remarked, special provision has been made for connecting and disconnecting the lever socket and ratchet segment without removing the handle bolt, for hand and windmill use. The ratchet head is made with a ratchet segment held in place with the same bolt which holds the handle socket in the bearer, and the handle socket forms a case for the ratchet segment to rotate in when in use with a windmill. The ratchet head is inclosed so as not to endanger the fingers of the user. The ratchet segment is connected to the handle socket by means of a malleable pin, and when wanted for windmill use the pin is removed and the handle remains stationary, while the windmill rod works freely and the ratchet segment rotates in the handle socket. It is pointed out that in connecting the handle to the ratchet segment for hand use there is no possible danger of engaging the segment in the wrong tooth on the ratchet bar of the windmill rod, as the ratchet segment is always in contact with the ratchet bar and is provided with a hole corresponding to the one in the handle socket for passing the malleable pin through to connect the segment and handle socket. The pump is fitted with the company's improved compression spout. It has an outlet back of the spout, also stuffing box and brass hose coupling, and can be fitted for 1¼, 1½ or 2 in. suction. The bearer is held in place with three hook bolts to make a strong and substantial pump for deep wells.

The Barnes Improved Hand and Windmill Pump Standard, with Ratchet Head and Air Chamber in Stock.

Adjustable Gutter Beader.

The Peck, Stow & Wilcox Company, Southington, Conn., and 27 Murray street, New York, has put on the market the No. 30 adjustable gutter beader. The tool enables a workman to form beads on gutters with rods from ⅜ to ⅞ in. diameters inclusive. As furnished regularly but one rod is sent, but any or all rods within the limits mentioned may be obtained and used on metals of varying gauges determined largely by the diameter of the rod. There is a gauge or stop at the left, so that after adjusting the jaws and setting the gauge for the diameter of rod to be used, the jaws may be easily opened to remove the work and rod, and again closed to exactly the same position as when the bead was formed. This permits the individual to form any number of beads exactly the same size. The jaws are adjusted by a hand wheel with rack and pinion which adjusts both ends of the movable jaw. The beader is 30 in. long and weighs 50 lb.

Adjustable Gutter Beader, No. 30.

Miter Box Set and Paper Hanger's Miter Box.

C. E. Jennings & Co., 42 Murray street, New York, have put on the market a paper hanger's miter box, No. 5. This is made of heavy hard wood, with hexagon, octagon, 45-degree, and straight cuts in two directions. It is 18 in. long, 2 in. wide inside and 2 in. high inside, made with bottom and one side only. It weighs 2¼ lb., and there are six dozen crated in one package. They are also manufacturing a miter box complete with a warranted back saw, 12 in., catalogued as miter box set No. 11. This is sold as a combination at a popular price for amateurs or others and may be used for all kinds

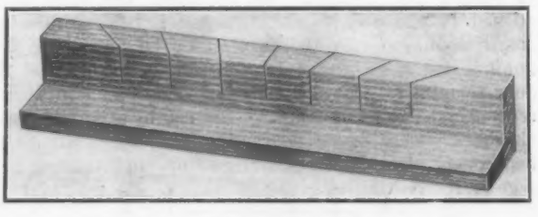


Fig. 1.—Paper Hanger's Miter Box, No. 5.

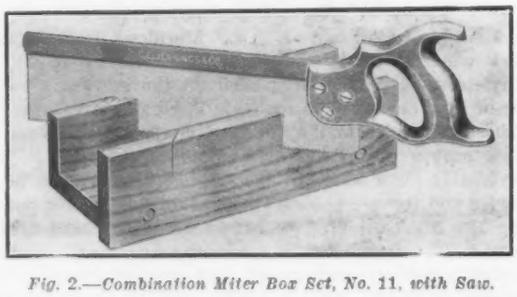


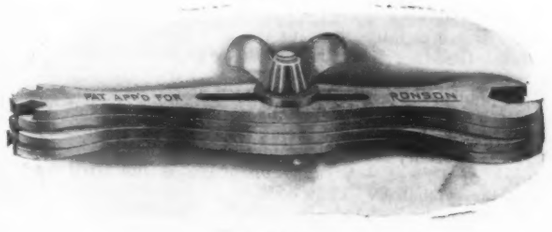
Fig. 2.—Combination Miter Box Set, No. 11, with Saw.

of wood mitering, especially for picture and other moldings. The miter box is made of hard wood, with two upright sides and an offset at the bottom to hold it firmly against bench or table when sawing. It is 12 in. long, 2⅞ in. wide and 2⅛ in. high inside. Each miter box is put up with saw in a neat pasteboard box and attractively labeled.

The Ronson Wrench.

Cryder & Co., Park avenue and Sixty-third street, New York, are putting on the market the wrench shown herewith, a top and side view being given. The wrench, or series of wrenches, is 6 in. in length when closed and weighs 8 oz. Nine wrenches are comprised in the tool, ranging in size from 3-16 to 13-16 in. Each of the four pieces, it is stated, is made of flawless plate steel, carefully heat tempered, so that the tool can fully cope with almost any required service about an automobile. The center bolt and wing nut are drop forged, and when one of the ends is pulled out for use the remainder forms a handle, giving great leverage with the wing nut resting between the fingers. The wing nut has a squared shank making it, it is remarked, physically and mechanically impossible for the members to turn. The wrench is finely finished in incorrodible nickel, has sharp, cleancut lines, and can be comfortably carried in the pocket. It is made narrow enough to fit in places where most other wrenches would be useless, and is offered by the manufacturers as a tool for the mechanic, shop, office, farm or home.

Top View.



Side View.

The Ronson Wrench, Length Closed, 6 In.; Weight, 8 Oz.; Nine Wrenches in One.

PAINTS, OILS AND COLORS

Animal, Fish and Vegetable Oils—

	₱ gal. bbl. lots
Linseed, Western, Raw	.62 @63
State, Raw	.62 @63
City, Raw	.63 @64
Boiled, 1¢ ₱ gal. advance on Raw.	
Raw, Calcutta, in bbls	.75 @..
Lard, Prime Winter	1.05@1.10
Extra No. 1	.59 @62
No. 1	.55 @56
Cotton-seed, Crude, f.o.b. mill	5.93@6.08
Summer, Yellow, prime	6.70@6.80
Summer, White	7 @ 7¼
Yellow, Winter	7¼@ 7½
Tallow Oil, Acidless	.57 @60
Menhaden, Brown, Strained	.29 @31
Northern, Crude	@..
Southern	.24 @25
Light, Strained	.29 @31
Bleached Winter	.32 @..
Extra Bleached Winter	.34 @..
Cocoanut, Ceylon	₱ lb —@ 8¼
Cochin	9½@10½
Cod, Domestic, Prime	.38 @40
Newfoundland	.42 @44
Red Elaine	.49 @51
Saponified	₱ lb 7¼@ 7¼
Olive, Yellow	.80 @90
Neatsfoot, Prime	..@62
Palm, Lagos	₱ lb 6.40@ 6½

Mineral Oils—

	₱ gal.
Black, 29 gravity, 25@30 cold test	12½@13
29 gravity, 15 cold test	.13 @13½
Summer	.12 @12½
Cylinder, light filtered	.20 @20½
Dark, filtered	17½@18
Paraffine, 903-907 sp. gravity	.14 @14½
903 sp. gravity	.13 @13½
883 sp. gravity	10½@11
Red	.10 @10½

Miscellaneous—

Barytes:	
White, Foreign	₱ ton $18.50@20.50
Amer., floated	₱ ton 17.00@18.00
Off color	₱ ton 12.50@15.00
Chalk in bulk	₱ ton 3.00@ 3.40
China Clay, Imported	₱ ton 11.50@18.00
Cobalt, Oxide	₱ 100 lb 1.45@ 2.60
Whiting, Commercial	₱ 100 lb 45@50
Gilders	₱ 100 lb .52@ .64
Ex. Gilders	₱ 100 lb .56@ .68

Putty, Commercial—₱ 100 lb

In bladders	$1.70@2.00
In bbls. or tubs, 100 lb	1.20@1.45
In 1 lb to 5 lb tins	2.65@3.25
In 12½ to 50 lb tins	1.50@1.90

Spirits Turpentine—₱ gal.

In Oil bbls	.58 @58½
In Machine bbls	58½@59

Glue—

	₱ lb
Cabinet	.12 @15
Common Bone	7½@ 9
Extra White	.18 @24
Fish, liquid, 50 gal. bbls., per gallon	.60 @1.20
Foot Stock, White	.12 @14
Foot Stock, Brown	.9 @11
German Common Hide	.10 @12
German Hide	.12 @18
French	.10 @40
Irish	.13 @16
Low Grade	.10 @12
Medium White	.14 @19

Gum Shellac—

	₱ lb
Bleached, Commercial	.16 @17
Bone Dry	.20 @21
Button	.20 @30
Diamond I	.22 @23
Fine Orange	.18 @20
A. C. Garnet	15½@16
Light Orange	.17 @19
Kala Button	.13 @15
D. C.	23½@24
Octagon B	.20 @22
T. N	14¾@16
V. S. O	21½@22

Colors in Oil—

	₱ lb
Black, Lampblack	.12 @14
Blue, Chinese	.36 @46
Blue, Prussian	.32 @36
Blue, Ultramarine	.13 @16
Brown, Vandyke	.11 @14
Green, Chrome	.12 @16
Green, Paris	.. @24
Sienna, Raw	.12 @15
Sienna, Burnt	.12 @15
Umber, Raw	.11 @14
Umber, Burnt	.11 @14

White and Red Lead, &c.—

	₱ lb
Lead, English White, in Oil	9½@ 9⅝
Lead, American White:	
Dry and in Oil, 100, 250 and 500 lb kegs	6¾
Dry and in Oil, 25 and 50 lb kegs	7
Dry and in Oil, 12½ lb kegs	7¼
In Oil, 25 lb tin pails	7¼
In Oil, 12½ lb tin pails	7¾
In Oil, 1, 2, 3 and 5 lb tin cans, ass't	8¾
Red Lead and Litharge:	
In 100 lb kegs	7
In 25 and 50 lb kegs	7¼
In 12½ lb kegs	7½
In lots of less than 500 lbs, ½¢ ₱ lb advance over above prices of White and Red Lead and Litharge.	
Lead, American. Terms: On lots of 500 lbs and over, 60 days, or 2% for cash if paid in 15 days from date of invoice.	

Zinc, Dry—

	₱ lb
American, dry	5¾@ 6½
Red Seal (French process)	6¾@ 7
Green Seal	7⅛@ 7½
German Red Seal (French process)	7¼@ 7⅜
Green Seal	7⅜@ 8
White Seal	8⅝@ 9
French, Red Seal	7½@ 8¼
Green Seal	.10 @10¾

Dry Colors—

	₱ lb
Black, Carbon	.5 @10
Black Drop, American	3½@ 8
Black Drop, English	5 @15
Black, Ivory	.16 @20
Lamp, commercial	3 @ 5
Blue, Celestial	4 @ 6
Blue, Chinese	.30 @31
Blue, Prussian, Domestic	.28 @30
Blue, Ultramarine	.5 @15
Brown, Spanish	½@ 1
Carmine, No. 40	2.65@2.75
Green, Chrome, ordinary	3½@ 5
Green, Chrome, pure	.17 @25
Metallic Paint, ₱ ton.	
Brown	$16.50@$22.00
Red	$14.00@$18.00
Ocher, American	₱ ton $12.00@15.00
American Golden	1 @ 5
French	1¼@ 2
Foreign Golden	3 @ 4
Orange Mineral, English	.10 @12
French	12¾@13
German	.12 @13
American	8½@10
Red, Indian, English	5 @ 7
American	3 @ 3¼
Red, Turkey, English	4 @10
Red, Tuscan, English	7 @10
Red, Venetian, Amer.	₱ 100 lb $0.75@1.50
English	₱ 100 lb $1.15@1.60
Sienna, Italian, Burnt and Powdered	3 @ 9
Italian, Raw, Powdered	3 @ 7
American, Raw	2¼@ 3
American Burnt and Pow'd.	2¼@ 3
Talc, French	₱ ton $18.00@25.00
American	₱ ton 15.00@25.00
Terra Alba, French	₱ 100 lb .80@1.00
English	₱ 100 lb .90@1.00
American	₱ 100 lb, No. 1, .75@ .80
American	₱ 100 lb, No. 2, .60@ .65
Umber, Turkey, Bnt. & Pow.	2¾@ 3
Turkey, Raw and Powdered	2¾@ 3
Burnt, American	2 @ 2¼
Raw, American	2 @ 2½
Yellow, Chrome, Pure	12¼@13
Oxide, Red, American	2 @ 7½
Vermilion, English, Imported	.@70
Chinese	$0.90@1.00

THE IRON AGE

The oldest paper in the world devoted to the interests of the Hardware, Iron, Machinery and Metal Trades, and a standard authority on all matters relating to those branches of industry.

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Subscription, postpaid, $5 00 a year.

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Current Hardware Prices.

General Goods.—Goods which are made by more than one manufacturer are printed in *Italics*. The prices named represent those obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are usually given to larger buyers.

Special Goods.—Quotations printed in small type (Roman) relate to goods of particular manufacturers, who request the publication of the prices named and are responsible for their correctness. They usually represent the prices to the small trade, lower prices being generally obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33⅓ @ 33⅓ & 10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued annually, a book of 376 pages, which is sent free of charge to every subscriber to *The Iron Age*. It gives a classified list of the products of our advertisers and thus serves as an up-to-date DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—"The Iron Age Standard Hardware Lists," 218 pages, price $2, prepaid, contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters, Blind—

North's 10%
Upson's Patent..... 25%
Zimmerman's—See Fasteners, Blind.

Window Stop—

Ives' Patent..... 25%
Ives' Stop Bead Screws and Washers 25%
Taplin's Perfection..... 25%

Anti—Rattlers—

Fernald Mfg. Co. Burton Anti-Rattlers, ℔ doz. pairs, Nos. 1, $0.75; 2, $0.60; 3, $0.65; 4, $1.00; 5, $0.50.
Quick Shifter, ℔ doz. pairs..... $2.00@$3.00
Spitzli Quick Shifter, ℔ doz. pairs ..... $1.65@$1.75

Anvils—American—

Eagle Anvils ..... ℔ lb @9 ¢
Hay-Budden, Wrought..... 9½@9¾ ¢
Trenton ..... ℔ lb 9½@9¾ ¢

Imported—

Swedish Solid Steel Paragon, ℔ lb ..... 9½@9¾ ¢
Peter Wright & Sons, ℔ lb, 84 to 349 lb, 10½ ¢; 350 to 600 lb, 11¢.

Anvil, Vice and Drill—

Millers Falls Co., $18.00..... 15&10%

Augers and Bits—

Com. Double Spur..... 80%
Jennings' Patn., Bright. 65&10@70%
Black Lip or Blued... 65@65&5%
Boring Mach. Augers..... 70%
Car Bits, 12-in. twist..... 40&10%
Ford's Auger and Car Bits..... 40&5%
Ft. Washington Auger Co..... 35%
Forstner Pat. Auger Bits..... 25%
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jennings' list. 25&7½%
No. 30, R. Jennings' list..... 50%
Russell Jennings'..... 25&15&2½%
Mayhew's Countersink Bits..... 45%
Pugh's Black..... 20%
Pugh's Jennings' Pattern..... 35%
Snell's Auger Bits..... 60&10%
Snell's Bell Hangers' Bits..... 60%
Snell's Car Bits, 12-in. twist..... 60%
Snell's King Auger Bits..... 30%
Snell's Star Auger Bits..... 50&10%
Swan's Auger Bits..... 65&10@70%
Swan's, Jennings' Pattern..... 50%

Expansive Bits—

Ford's, Clark's Pattern..... 66⅔%
C. E. Jennings & Co., Steer's Pat.. 25%
Lavigne Pat., small size, $18.00; large size, $26.00..... 60&10%
Swan's 60%

Gimlet Bits—

Per gro.
Common Dbl. Cut.....*$3.00@3.25*
German Pattern, Nos. 1 to 10, $4.75; 11 to 13, $5.25

Hollow Augers—

Bonney Pat., per doz..$5.50@6.00
Ames ..... 20&10%
Universal 20%

Ship Augers and Bits—

Ship Augers..... 40&10@50%
Ford's ..... 33⅓&5%
C. E. Jennings & Co.:
L'Hommedieu's 6%
Watrous' ..... 33⅓&7½%
Snell's 50%

Awls—

Elmore Tool Mfg. Co.:
Tinners' and Brad Awls..... 35&7½%
Scratch Awls..... 60%

Axes—

Single Bit, base weights: Per doz.
First Quality.....*$4.75@5.00*
Second Quality.....*$4.25@4.50*
Double Bit, base weights:
First Quality.....*$7.00@7.50*
Second Quality.....*$6.50@6.75*

Axles— *Iron or Steel.*

Concord, Loose Collar...4¼@4½¢
Concord, Solid Collar....4½@5 ¢
No. 1 Common, Loose...3½@4 ¢
No. 1½ Com., New Style.4¼@4¾¢
No. 2 Solid Collar.....4¼@4¾¢
Half Patent:
Nos. 7, 8, 11 and 12.....70%
Nos. 13 to 14.....70%
Nos. 15 to 18...70&10@70&10&5%
Nos. 19 to 22...70&10@70&10&5%

Boxes, Axles—

Common and Concord, not turned ..... *lb., 5@6¢*
Common and Concord, turned, lb., 6@7¢
Half Patent.....*lb., 9½@10¢*

Bait— Fishing—

Hendryx:
A Bait..... 20%
B Bait..... 25%
Competitor Bait..... 20&5%

Balances— Sash—

Caldwell new list..... 50&10%
Pullman ..... 50&10%

Spring—

Light Spring Balances.50&10@60%
Chatillon's:
Light Spg. Balances..... 50&10@60%
Straight Balances..... 40&10@50%
Circular Balances..... 50&10@60%
Large Dial..... 30@30&10%

Bars— Crow—

Steel Crowbars, 10 to 40 lb.... per lb., 2¾@3¢

Prying and Pinch—

Elmore Tool Mfg. Co..... 75%

Towel—

No. 10 Ideal, Nickel Plate..℔ gro. $8.50

Beams, Scale—

Scale Beams.....*40@40&10%*
Chattillon's No. 1..... 30%
Chatillon's No. 2..... 40%

Beaters, Carpet—

Holt-Lyon Co.:
No. 12 Wire Coppered ℔ doz. $0.80; Tinned $0.85
No. 11 Wire Coppered ℔ doz. $1.15; Tinned $1.29
No. 10 Wire Tinned.....℔ doz. $1.50

Beaters Egg—

Dover Stamping & Mfg. Co.:
Genuine Dover, per gro., No. 1, Tumbler Size, $4.50; No. 2, Family Size, $7.50; No. 3, Extra Family Size, $24.00; No. 4, Hotel Size, $39.00.
Holt-Lyon Co.:
Holt, per doz., No. 5, Jap'd. $0.80; No. A, Jap'd, $1.15; No. B, Jap'd, $1.85; No. 6, Jap'd, $1.65.
Lyon, Jap'd, per doz., No. 2, $1.35.
Taplin Mfg. Co.:
Improved Dover, per gro., No. 60, $6.00; No. 75, $6.50; No. 100, $7.00; No. 102, Tin'd, $8.50; No. 150, Hotel, $15.00; No. 152, Hotel Tin'd, $17.00; No. 200, Tumbler, $8.50; No. 202, Tumbler Tin'd, $9.50; No. 300, Mammoth, per doz., $25.00.

Bellows—

Blacksmith, Standard List:
Split Leather.....*60@60&10%*
Grain Leather.....*50@50&10%*

Hand—

Inch..	*6*	*7*	*8*	*9*	*10*
Doz..	*$5.50*	*5.50*	*6.00*	*7.00*	*7.50*

Molders—

Inch..	*10*	*12*	*14*	*16*
Doz..	*$8.50*	*11.00*	*13.50*	*14.50*

Net Prices.

Bells— Cow—

Wrought Cow Bells.....75%
Jersey ..... 75&10%
Texas Star..... 50%

Door—

Reading Hardware Co..... 50%
Howe, R. & E. Mfg. Co.'s..... 55&10%

Hand—

Polished, Brass..... 60@60&10%
White Metal..... 60@60&10%
Nickel Plated..... 50&10%
Swiss ..... 50&10%

Miscellaneous—

Farm Bells..... *lb., 2½@3¢*
Church and School....60@60&5%

Belting— Leather—

Extra Hvy. Single and Dble..55%
Heavy, Single and Double...60%
Medium, Single and Double, 60&10%
Light, Single and Double, 60&10&10%
*Shoulder, Single and Double.*75%
Standard ..... 70&10%
Cut Leather Lacing, Strictly No. 1..... 45%
Leather Lacing Sides, per sq. ft. Raw Hide, No. 1, in sides 17 sq. ft. and over, 27¢; No. 2, under 17 sq. ft...... 26¢

Rubber—

Competition (Low Grade), 70&10@75%
Standard ..... 60&10@70%
Best Grades..... 50@50&10%

Benders and Upsetters, Tire—

Green River Tire Benders and Upsetters 20%

Bicycle Goods—

John S. Leng's Son & Co.'s 1909 list:
Chain, Parts, Spokes..... 50%
Tubes 60%

Blocks Tackle—

Common Wooden.....75@75&10%
Lane's Patent Automatic Lock and Junior 30%
See also Machines, Hoisting.

Boards, Stove—

Paper and Wood Lined.50&10@60%
Embossed ..... 50&10@60%

Bobs, Plumb—

Keuffel & Esser Co..... 33⅓&10%

Bolts

Carriage, Machine, &c,—

Common Carriage (cut thread): ⅜ x 6 and smaller.....70&7½%
Larger and longer.....65&5%
Common Carriage (rolled thread): ⅜ x 6, smaller and shorter, 70&12½%
Phila. Eagle, $3.00 list...80@—%
Bolt Ends, with C. & T. Nuts, 65&5%
Machine (Cut Thread): ⅜ x 4 and smaller....70&12½%
Larger and longer.....65&10%

Door and Shutter—

Wrought Iron:
Wrought Barrel Japanned, 80&10&10@85%
Barrel Bronzed.....60&10@70%
Spring ..... 70&10&10@80%
Square Neck.....75&10@80%
Square ..... 80@80&10%
Ives' Mortise Door..... 25%
Ives' Wrought Door..... 25%

Expansion—

F. H. Evans' Crescent..... 40@60%
Richards Mfg. Co..... 55&10%
Star Expansion Bolt Co.:
Star, Lag Screw Type..60&10&5&2½%
Star, Wood Screw Type..... 40%
Star, Machine, Single Wedge..... 60%
Star, Machine, Double Wedge. 60@10%
Star Toggle Bolts..... 60%
Steward & Romain Mfg. Co.:
Style No. 13, Double..... 60@10%
Style No. 1, Single..... 60@10%
Style No. 100, Dbl. Jaw, Single..55%
Lag Screw..... 66⅔%
Star Screw Anchors, Hollow:.....40%

Plow and Stove—

Plow ..... *65&5@70%*
Stove ..... *85&5@85&10%*

Tire—

Common Iron..... 80%
Norway Iron..... 80%
American Screw Co.:
Norway Phila., list Oct. 16, '94...80%
Eagle Phila., list Oct. 16, '94. 92½%
Bay State, list Dec. 28, '99.....80%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '94...80%
Eagle Phila., list Oct. 16, '94...82½%
Eclipse, list Dec. 28, '99.....80%
Russell, Burdsall & Ward Bolt & Nut Co.:
Empire, list Dec. 28, '99.....80%
Norway Phila., list Oct. '94.....80%
Eagle 82½%
Shelton Co.:
Tiger Brand, list Dec. 28, '99....80%
Phila., Eagle, list Oct. 16, 1881..82½%
Upson Nut Co.:
Tire Bolts..... 80%

Borers, Bung—

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.75; No. 3, $2.50 each..... 25%

Boxes, Mitre—

C. E. Jennings & Co..... 25%
Langdon, New Langdon and Langdon Improved, 20&10%; Langdon Acme ..... 15&10%

Braces—

Common Ball.....*$1.50@$1.75*
Barber's ..... 50&10&10@60&10%
Fray's Genuine Spofford's..... 60%
Fray's No. 61, 166, 206, 614..... 50%
C. E. Jennings & Co..... 50&5%
Mayhew's Ratchet..... 40%
Mayhew's Quick Action Hay Patent ..... 40&10%
Millers Falls Drill Braces..... 25&10%
P., S. & W. Co., Peck's Pat Revised List..... 60@60&5%

Brackets—

Wrought Steel.....80@80&5%
Griffin's Pressed Steel..... 75@75&10%
Griffin's Folding Brackets..... 70&10%
Stanley's Pressed Steel..... 75&10&5%
Stanley's Folding Brackets..70&10&5%
Taplin Victor Handy Egg Beater Bracket ..... ℔ doz. $1.50

Broilers—

Kilbourne Mfg. Co..... 75&20%
Wire Goods Co..... 75&10%

Butts— Brass—

Wrought 65%
Cast Brass, Tiebout's..... 77.40&10%

Wrought Steel—

BRIGHT.
Light Narrow, Light Reversible ..... 75&5%
Reversible and Broad.75&10%
Loose Joint, Narrow, Light Inside Blind, &c..... 75%
Back Flaps, Table Chest.70%
BRONZED.
Light Narrow, Loose Pin..55%
Light, Loose Pin, Ball Tip.65%
Broad 55%

Extra, 5@—

Cages, Bird—

Hendryx Brass: Series 3000, 5000, 1100, net list: 1200, 15%; 200, 300, 900 ..... 30%
Hendryx Bronze: Series 700, 800....30%
Hendryx Enameled..... 35%

Calks, Toe and Heel—

Blunt, 1 prong, per 100 lb., $3.80@$4.00
Sharp, 1 prong, per 100 lb., $4.30@$4.50
Burke's, 1 pg. Blunt Toe, 3¾¢; 2 pg. Blunt Toe, 4¼¢; 1 pg. Sharp Toe, 4¼¢; 2 pg. Sharp, 4¾¢; Blunt Heel, 4¼¢; Sharp Heel....4¾¢
Perkins', Blunt, ℔ lb, 3.65¢; Sharp, 4.15¢

Caps— Primers—

Berdan Primers, $2 per M.20&5%
Primer Shells and Bullets..15&10%
All other primers per M.$1.52@1.60

Cartridges—

Blank Cartridges:
32 C. F., $5.50.....10&5%
38 C. F., $7.00.....10&5%
22 cal. Rim, $1.50.....10&5%
32 cal. Rim, $2.75.....10&5%
B. B. Caps, Con. Ball, Swgd.$1.90
B. B. Caps, Round Ball.....$1.40
Central Fire.....25%
Target and Sporting Rifle.15&5%
Primed Shells and Bullets.15&10%
Rim Fire, Sporting.....50%
Rim Fire, Military.....15&5%

Casters—

Bed .....65&10@70%
Plate .....60@60&10%
Philadelphia .....70&10@75%
Gem (Roller Bearing).....70&10&10&5%
Steel Gem (Roller Bearing).....70%
Standard Ball Bearing.....45%
Yale (Double Wheel) low list...40&10%

Chain, Proof Coil—

American Coil, Straight Link:

3-16	¼	5-16	⅜	½	⅝
$7.70	5.05	4.10	3.50	3.35	3.25

¾-⅞-1. 1⅛ to 1¼ inch.
$3.15 3.25
German Coil.....70&5%
German Pattern Coil:
6-0 to 1.....70&10&5%
2 and 3.....60&10&10@70%
4, 5 and 6.....50&10@50&10&5%

Halter—

Halter Chains.....60&5@60&10%
German Pattern Halter Chains, list July 24, '97.....70&5%
Covert Mfg. Co.:
Halter .....30&10&10%

Trace, Wagon, &c.

Traces, Western Standard: 100 pr.
6½—6-3, Straight, with ring.$26.00
6½—6-2, Straight, with ring.$27.00
6½—8-2, Straight, with ring.$30.00
6½—10-2, Straight, with ring.$35.00
NOTE.—Add 2c per pair for Hooks Twist Traces: add per pair for Nos. 2 and 3, 2c: No. 1, 3c; No. 0, 4c to price of Straight Link.
Eastern Standard Traces, Wagon Chain, &c.....70&10@—%

Miscellaneous—

Jack Chain:
Iron .....60&10&10@70%
Brass .....60&10&10@70%
Safety and Plumbers' Chain..75%
Gal. Pump Chain....lb., 4½@5%
Bridgeport Chain Co.:
Triumph Halter and Coil.35&2½@40%
Triumph Dog.....50&10@60%
Brown Halter and Coil.....45@50&5%
Covert Mfg. Co.:
Breast, Halter, Heel, Rein, Stallion, Post.....30&10&10%
Oneida Community:
American Halter, Dog and Kennel Chains .....35&2½@40%
Niagara Dog Leads and Kennel Chains .....45@50&5%
Wire Goods Co.:
Dog Chain.....70%
Universal Dbl.-Jointed Chain..50&10%

Chain and Ribbon, Sash—

Oneida Community:
Steel Chain.....60%
Pullman:
Bronze Chain, 60%; Steel Chain, Coppered .....60&10%
Sash Chain Attachments, per set..88¢
Aluminoy Sash Ribbon, per 100 ft. .....$2.00@$5.00
Sash Ribbon Attachments, per set..8¢

Chalk—

Carpenters' Blue....gro., 50@55¢
Carpenters' Red.....gro., 50@55¢
Carpenters' White...gro., 30@45¢

Checks, Door—

Bardsley's 33⅓%
Reading, Ogden.....20&5%
Pullman, per gro.....$54.00
Russwin 33⅓%

Chests, Tool—

American Tool Chest Co.:
Boys' Chests, with Tools.....55%
Youths' Chests, with Tools.....40%
Gentlemen's Chests, with Tools..30%
Farmers', Carpenters, etc., Chests, with Tools 20%
Machinists' and Pipe Fitters' Chests, Empty.....45%
Tool Cabinets.....45%
C. E. Jennings & Co.'s Machinists' Tool Chests.....7½%

Chisels—

Socket Framing and Firmer

Standard List.....80&10@—%
Buck Bros.....30%
C. E. Jennings & Co.:
Socket Firmer No. 10.....25&7½%
Socket Framing No. 15.....25&7½%
R. & E. Mfg. Co.....70@70&10%
Swan's .....66⅔@70%
L. & I. J. White & Co.....30@30&5%

Tanged—

Tanged Firmers.....35&10@40%
Buck Bros.....30%
C. E. Jennings & Co. Nos. 191, 181..25%
R. & E. Mfg. Co.....25@30&5%
L. & I. J. White Co.....25&5%

Box—

Elmore Tool Mfg. Co.....50%

Cold— lb.

Cold Chisels, good quality.13@15¢
Cold Chisels, fair quality.11@12¢
Cold Chisels, ordinary.... 9@10¢
Elmore Tool Mfg. Co.:
Cold Chisels.....50&5%

Chucks—

Almond Drill Chucks.....35%
Almond Turret Six-Tool Chuck.....40%
Beach Pat, each $8.00.....35&5%
Cincinnati Chuck Co.:
Independent 4-jaw Reversible.....35%
Jacobs' Drill Chucks.....35%
Skinner Lathe Chucks:
Independent 35%
Universal, Reversible Jaws.....35%
Universal, Com. Style Jaws.....40%
Combination, Reversible Jaws....35%
Combination, Com. Style Jaws...40%
Round Body or Box Body, 2 Chuck Jaws 25%
Geared Scroll Chucks.....25%
Drill Chucks:
New Model, 25%; Geared Pattern, 25%; Skinner Patent, ...25%
Positive Drive.....40%
Planer Chucks.....20%
Standard 45%
Drill Press Vises.....30%
Face Plate Jaws.....35%
Standard Tool Co.:
Improved Drill Chuck.....45%
Union Mfg. Co.:
Combination, Nos. 1, 2, 3, 4, 5, 6, 7, 8 and 17, 40%; No. 21.....35%
Scroll Combinations, Nos. 83 and 84 .....30%
Geared Scroll, Nos. 33, 34 and 35..25%
Independent Iron, Nos. 18 and 318.35%
Independent Steel, No. 64.....25%
Union Drill, Nos. 000, 00, 100, 101, 102, 103, 104.....35%
Union Czar Drill.....25%
Union Geared Drill Chuck.....25%
Universal, 11, 12, 16, 17, 13, 14, 15..40%
Universal No. 42.....35%
Iron Face Plate Jaws, Nos. 28, 30, 48 and 50.....35%
Steel Face Plate Jaws, Nos. 70 and 72 .....30%
Westcott Patent Chucks:
Lathe Chucks.....50%
Little Giant Auxiliary Drill.....50%
Little Giant Double Grip Drill...50%
Little Giant Drill, Improved.....50%
Oneida Drill.....50%
Scroll Combination Lathe.....50%

Clamps—

Carriage Makers', Star, P., S. & W. Co. .....50@50&5%
Besly, Parallel.....33⅓&10%
Hammer & Co.:
Adjustable .....20&5%
Carriage Makers' H, P Screw.40&5%
Myers', Standard and Wenzelmann Hay Rack.....50%
Saw Clamps, see Vises, Saw Filers'.

Cleaners, Drain,

Iwan's Champion, Adjustable.....50%
Iwan's Champion, Stationary....40&5%

Cleavers, Butchers'—

Foster Bros.....30%
L. & I. J. White Co.....30%

Clippers, Horse and Sheep—

Chicago Flexible Shaft Co.:
1902 Chicago Horse, each..$10.75
20th Century Horse, each....$5.00
Lightning Belt Horse, each.$15.00
Chicago Belt Horse, each..$20.00
Stewart's Enclosed Gear Ball Bearing Horse, each.....$7.50
Stewart's New Model Sheep Shearing Machine, each..$12.75
Stewart Enclosed Gear Shearing Machine, No. 8, each..$9.75

Clips, Axle—

Regular Styles.....80&10@10%

Cocks, Brass—

Hardware list:
Plain Bibbs, Globe, Kerosene, Racking, Liquor, Bottling, &c 75%
Compression Bibbs.....75%

Compasses, Dividers, &c.

Ordinary Goods.....75@75&5%

Conductor Pipe,—

All territories, L. C. L.
Galvanized Steel...75&10&5@—%
Charcoal .....50&10&7½@—%
Copper .....50&10@—%
Terms, 60 days: 2% cash 10 days. Factory shipments generally delivered.
See also Eave Troughs.

Coolers, Water—

L. & G. Mfg. Co.:

Galvanized, Lined, side handles, Gal....	2	3	4	6	8
Each ...	$1.30	1.60	2.00	2.30	3.00
White Enameled Lined, Side Handles: Gal....	2	3	4	5	8
Each ...	$2.40	2.80	3.50	4.50	5.60
Agate Lined, Side Handles: Gal....	2	3	4	6	8
Each ...	$3.00	3.40	4.30	5.30	6.60

10%

Coppers, Soldering—

Soldering Coppers, 3 lb. to pair and heavier, 21¢; lighter than 3 lb. to pair.....23¢

Cord— Sash—

Braided, Drab.....lb. 35¢
Braided, White, Com., Nos. 8 to 12, 27¢; No. 7, 27½¢; No. 6, 28½¢.
Cable Laid Italian, lb., No. 18.37¢
Italian, lb., A, No. 18, 25¢; B, 22¢
Common India.....lb., 11@11½¢
Cotton Sash Cord, Tw'td.18½@22¢
Patent Russia.....lb....20¢
Cable Laid Russia.....lb...21¢
India Hemp, Br'd'd.....lb...21¢
India Hemp, Twisted...lb.13@14¢
Patent India, Twisted..lb...17¢
Eddystone, Braided, Nos. 8 to 12, 26¢; 7, 26½; 6, 27½¢.
Harmony Cable Laid Italian, Nos. 7 to10.....℔ lb 23¢
Pullman:
Wire Sash Cord.....10%
Sash Cord Attachments, per 100..$2.00
Samson, Nos. 8 to 12:
Braided, ℔ lb., Drab Cotton, 55¢; Italian Hemp, 40¢@50¢; Linen, 65¢; White Cotton, 50¢; Spot Cord.....50¢
Massachusetts, White...℔ lb 40¢
Massachusetts, Drab....℔ lb 45¢
Phoenix, White, Nos 8 to 12....27¢
15%
Silver Lake, per lb.:
A, Drab, 45¢; A, White, 40¢; B, Drab, 40¢; B, White, 35¢; Italian Hemp, 40¢; Linen....57½¢
See also Chain and Ribbon.

Wire, Picture—

Full Length.....90@—%
Short Length.....90&10@—%
Hendryx Standard Wire Picture Cord. 90&10%
Turner & Stanton Co, Wire Picture Cord .....90&10%

Cradles—

Grain 50%

Crayons—

White Round Crayons, Cases, 100 gro., $8.00, $8.50, $9.00 and $10.00 according to grade.
Zelnicker's Lumber: ℔ gro.
White and Purple, Indelible....$7.50
Blue, Red, Green, Yellow and Terra Cotta, $6.50; Black.....$4.50
Giant Lumber, 5¼ in. x 15-16 in. round, all colors, $12.00; Indelibles, $14.00; Blacks.....$10.00
Genuine Soapstone, Metal Workers', 5 in. x ¼ in. Round, $2.50; 5 in. x ¼ in. Square, $1.75; 5 x ½ x 3-16, $2.50; 5 x 1¼ x 3-16.....$3.00
Suremark, Black, $2.25; Blue, Red and Yellow.....$2.50

Cutlery, Table—

International Silver Company:
No. 12 M'd'm Knives, 1847, ℔ doz. $3.50
Star, Eagle, Rogers & Hamilton and Anchor.....℔ doz. $3.00
Wm. Rogers & Son.....℔ doz. $2.50

Cutters— Glass—

H. H. Mayhew Co.....40&5%

Meat and Food—

Enterprise:

Nos..	5	10	12	22	32
Each	$1.75	$2.50	$2.25	$4	$5

25@25&7½%
No. 202, $1.50.....40&7½%
P., S. & W. Co.:
Ideal .....40@40&5%
Hales .....60&5%
Little Giant.....℔ doz. 40@50%
Nos.. 305 310 312 320 322
$35.00 $18.00 $44.00 $72.00 $68.00
New Triumph No. 605, ℔ doz. $24.00.
Russwin Food, No. 1, $24.00; No. 2, $27.00; 3, $42.00.....45&10&10%
$15.00 $18.00

Slaw and Kraut—

Henry Disston & Sons:
Slaw and Kraut Cutters.....35%
Corn Graters.....30%
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife....℔ doz. $3.00
Combined Slaw Cutter and Corn Grater .....℔ doz. $4.00

Tobacco—

Enterprise .....25@30%

Diggers, Post Hole, &c—

Disston's:
Rapid, ℔ doz., $24.00.....25%
Samson, ℔ doz., $34.00.....25%
Iwan's Pat. Post Hole and Well Auger 40%
Vaughan Pattern Post Hole Augers, 4 to 9 in., ℔ doz.....$8.25
Perfection Post Hole Diggers, ℔ doz. $8.25
Split Handle Post Hole Diggers, ℔ doz., $7.25
Hercules Pattern, ℔ doz.....$8.75
Kohler's, ℔ doz., Universal, $14.00; Little Giant, $12.00; Genuine Hercules, $10.00; Invincible, $9.00; Rival, $8.50; Pioneer.....$7.50
Never-Break Crucible Steel Post Hole Diggers 60%

Dressers Emery Wheel—

Sterling Emery Wheel Dressers.....35%
Sterling Wheel Dresser Cutters.....35%

Drills and Drill Stocks—

Blacksmith's Common Drilling Machines .....$1.50@1.75
Breast, Millers Falls.....15&10%
Breast, P., S. & W.....30&10%
C. & C. Ratchet.....25%
Reversible Ratchet Die Stocks....25%
Forbes Die Stocks.....5%
Goodell Automatic Drills.50&10&60&10%
Millers Falls Automatic Drills, Graves', per doz., Nos. 1, $4.86; 2, $8.16.
Millers Falls Automatic Drills,33⅓&10%
Noyes Repair Shop Drill No. 10....20%
Ratchet, Parker's.....10%
Ratchet, Weston's, Styles A and B.50%
Ratchet, Weston's, Styles C, D and F 45%
Ratchet, Weston's, Style H Improved 45%
Ratchet, No. 012.....50%
Ratchet, Celebrated.....50%
Ratchet, Whitney's, P., S. & W...50%
Star Drills.....60%
Star Pipe Drills.....50&10%
Sebco Extension Drills.....40&10&5%
Star Drill Holders.....50&10&10%
Star Drill Points.....50&10&10%

Twist Drills—

Bit Stock.....65&5@70%
Taper and Straight Shank, 60&5@65%

Drivers, Screw—

Buck Bros.' Screw Driver Bits.....30%
Disston's Screw Drivers, Handles and Ferrules 70%
Elmore Tool Mfg. Co.:
Elmore 60%
Hartford 66⅔%
Indestructible .....55&7½%
Standard Neverturn.....66⅔%
Star .....75&5%
Screw Driver Bits.....25%
Fray's Hol. H'dle Sets, No. 3, $12..50%
Ford's Brace Screw Drivers....40&10%
Gay's Double Action Ratchet.....35%
Goodell's Auto.....65@65&10%
Mayhew's Black Handle.....45%
Mayhew's Monarch.....45%
Millers Falls, ℔ doz., Nos. 11, $9.95; 12, $13.73; 20, $8.17; 21, $8.46; 41, $13.43; 42, $17.21.
Swan's:
Nos. 7565 to 7568, 60%; No. 7510, 40&10%

Eave Trough, Galvanized—

All territories.
Galvanized Steel...80&10&10@—%
Copper .....50&10@—%
Terms.—2% for cash. Factory shipments generally delivered.
See also Conductor Pipe and Elbows.

Elbows and Shoes—

Factory shipments, all territories: Galv. Steel, Galv. C. I. and Copper.
Sizes 2, 3, 4.....80%
Sizes 1¼, 2½, 3½, 5, 6...60&10%
No. 26.....50%
No. 24.....25%
Copper Elbows.....50%

Emery, Turkish—

	¼ to ½:	5½ to 220:	Flour.
Kegs .....lb.	*5 ¢*	*5¼¢*	*5½¢*
½ Kegs.....lb.	*5¼¢*	*5¾¢*	*5¾¢*
¼ Kegs.....lb.	*5½¢*	*6 ¢*	*6 ¢*
10-lb. cans, 10 in case....	*6½¢*	*7 ¢*	*6 ¢*
10-lb. cans, less than 10.....	*10 ¢*	*10 ¢*	*8 ¢*
Less quantity..	*10 ¢*	*10 ¢*	*8 ¢*

NOTE.—In lots 1 to 3 tons a discount of 10% is given.

Extensions, Bit—

Ford's Auger Bit Extensions....40&5%

Extinguishers—Fire

Royal Mfg. Co. Fire, ℔ doz., $12.00 .....50%

Fasteners, Blind—

Upson's Patent.....25%
Walling's 50%
Zimmerman's Jap'd and Galv., 65%; Bronze and Plated.....50%

Cord and Weight—

Ives, ℔ gro., $1.08.....25%
Titan, ℔ gro., $0.66.....25%

Corrugated—

Acme Corrugated Fasteners.....70%

Faucets—

Cork Lined.....50&10@60%
Metallic Key, Leather Lined, .. 60&10@70%
Red Cedar.....40&5@40&10&5%
Petroleum.....70&10@75%

John Sommer Faucet Co.:
Peerless Tin Key.....40%
Boss Tin Key.....50%
Victor Metal Key.....50&10%
Duplex Metal Key.....60%
Diamond Lock.....40%
I.X.L. Cork Lined.....50%
Reliable Cork Lined.....50&10%
Chicago Cork Lined.....60%
O. K. Cork Lined.....50%
No Brand, Cedar.....50%
Perfection, Cedar.....30%

Self Measuring:
Enterprise, Self Measuring and Pump, ℔ doz., $36.00.....40&10%
Lane's, ℔ doz., $36.00.....40&10%

Files— Domestic—

Best Brands.....70&10@75&10%
Standard Brands.....75&10@80%
Lower Grade....75&10&10@80&10%

Disston's Superfine.....60%
Fitchburg.....80%
Heller Bros.....70&10@75&10%
Liveright Bros., Gold Medal.....70%
McCaffrey's American Standard, 60&10&10%
McCaffrey's Swiss Pattern.....45&10%
Simonds.....70%

Fixtures, Fire Door—

Richards Mfg. Co.:
Universal, No. 103; Special, No. 104.....$3.75
Fusible Links, No. 96.....50%
Expansion Bolts, No. 107.....60&10%

Grindstone—

Net Prices:

Inch	*15*	*17*	*19*	*21*
Per doz.	*$3.00*	*3.25*	*3.55*	*4.00*

Peck, Stow & Wilcox Co.:

In.	15	17	19	21	24
	$4.00	4.40	4.75	5.50	6.50

....20%

Reading Hardware Co.....50&10%

Frames— Wood Saw—

White, S'g't Bar, per doz.80@$1.00
Red, S'g't Bar, per doz.$1.00@1.25
Red, Dbl. Brace, per doz.$1.40@1 50

Freezers, Ice Cream—

Qt.....	*1*	*2*	*3*	*4*	*6*
Each....	*$1.25*	*$1.60*	*$1.90*	*$2.20*	*$2.80*

Fuse— *Per 1000 Feet.*

Hemp.....$2.75
Cotton.....3.20
Waterproof Sgl. Taped..3.65
Waterproof Dbl. Taped..4.40
Waterproof Tpl. Taped..5.15
} 10&2½%

Gates, Molasses and Oil—

Stebbins' Pattern.....80%

Gauges—

Marking, Mortise, &c..50@50&10%

Chapin-Stephens Co.:
Marking, Mortise, &c.....50&50&10%
Disston's Marking, Mortise, &c.60&10%
Wire, Brown & Sharpe's.....33⅓%
Wire, Morse's.....25%
Wire, P., S. & W. Co.....25%

Gimlets— Single Cut—

Numbered assortments, per gro.
Nail, Metal, No. 1, $2.00; 2, $2.30
Spike, Metal, No. 1, $4.00; 2, $4.30
Nail, Wood Handled, No. 1, $2.30; 2, $2.60
Spike, Wood Handled, No. 1, $4.30; 2, $4.60

Glasses, Level—

Chapin-Stephens Co.....65@65&10%
Disston & Sons.....60&10%

Glue, Liquid Fish—

Bottles or Cans, with Brush, 25&10@50%

Grease, Axle—

Common Grade...gro.$6.00@$6.50
Dixon's Everlasting, 10-lb. pails, ea. 85¢; in boxes, ℔ doz., 1 lb, $1.25; 2 lb.....$2.00
Helmet Hard Oil.....25%

Griddles, Soapstone—

Pike Mfg. Co.....33⅓@33⅓&10%

Grinders—

Pike Mfg. Co.:
Hand and Foot Power, Pyko Nos. 1, 2, 3; Pyko Primo; Pyko Peerless; Pyko Spiral (foot power).33⅓%
Mower Knife and Tool, $5.00..40&10%

Royal Mfg. Co.:
Hand Power, each, Nos. 01, $1.75; 02, $2.25; 1A, $2.50; 1B $3.2....33⅓%
Foot Power, No. 10, $5.00.....33⅓%
Encased Gears, No. 15 Hand Power, $13.50; Combined Hand and Foot Power, $15.00.....33⅓%
Lawn Mower Grinder, No. 40, $3.75.....33⅓%
Sickle Grinder, each, No. 20, $5.00.....33⅓%
Cast or Cut Gears.

Grindstones—

Pike Mfg. Co.:
Improved Family Grindstones. ℔ inch, ℔ doz., $2.00.....33⅓%
Richards Mfg. Co., Elt and Cycle, Ball Bearing, mounted.....40%

Grips, Nipple—

Perfect Nipple Grips.....40&10&2%

Halters and Ties—

Cow Ties.....70&10@—%

Bridgeport Chain Co.:
Triumph Coil and Halters.35&2½@40%
Brown Coil and Halters...45@50&5%
Brown Cow Ties.....50@50&5%
Brown Tie Outs.....70&10@75&5%

Covert Mfg. Co.:
Web.....30&10%
Jute Rope.....55%
Sisal Rope.....45%
Cotton Rope.....55%
Hemp Rope.....45%

Oneida Community:
Am. Coil and Halters.....40@40&5%
Am. Cow Ties.....35&2½@40%
Niagara Coil and Halters...45@50&5%
Niagara Cow Ties.....50%

Hammers—

Handled Hammers—

Heller's Machinists'..65&10@65&10&10%
Heller's Farriers'.....40@40&10%

Peck, Stow & Wilcox Co.:
Crucible Steel.....50%
Farriers'.....50%
Riveting.....50%
Machinists'.....50%
Blacksmiths'.....52%

Elmore Shoemakers' Hammers.....75%
Victor Magnetic Tack, ℔ gro....$7.75

Heavy Hammers and Sledges—

3 to 5 lb., 40¢.....80&10&10%
Over 5 lb, 30¢.....80&10&10&10%

Handles—

Agricultural Tool Handles

Axe, Pick, &c..60&10@60&10&10%
Hoe, Rake, &c.....30&5@30&10%
Fork, Shovel, Spade, &c.:
Long Handles.....30&5@30&10%
D Handles.....30&5@30&10%

Cross-Cut Saw Handles—

Atkins'.....35%
Disston's Handles and Saw Tabs..45%

Mechanics' Tool Handles—

Auger, assorted...gro.$3.00@$3.50
Brad Awl.....gro.$1.65@$1.75
Chisel Handles, Ass'd, per gro.:
Tanged Firmer, Apple, $2.40@ $2.65; Hickory.....$2.15@2.40
Socket Firming, Apple, $1.75@ $1.95; Hickory.....1.60@1.75
Socket Framing, Hickory, $1.60@$1.75
File, assorted.....gro.$1.25@$1.50
Hammer, Hatchet, &c. 60&10@60&10&5%
Hand Saw, Varnished, doz., 80¢; Not Varnished.....70@75¢
Plane Handles:
Jack, doz., 25¢; Fore, doz..40¢

Chapin-Stephens Co.:
Carving Tool.....30@30&10%
Chisel.....60@60&10%
File and Awl.....60@60&10%
Saw and Plane.....30@30&10%
Screw Driver.....30@30&10%

Millers Falls Adj. and Ratchet Auger Handles.....15&10%
Nicholson Simplicity File Handle.... ℔ gro. $0.85@$1.50

J. L. Osgood:
Indestructible File and Tool, ℔ gro., No. 1, $8.00; No. 2, $8.50; No. 3, $9.00; No. 4, $9.50; No. 5, $10.00.....gro. lots 10%

W. A. Zelnicker Supply Co.:
Hammer, ℔ doz., 12 in., $2.00; 14 in., $2.00; 16 in., $2.30; 18 12., $2.50; 20 in., $2.70; 22 in., $3.00; 24 in., $3.30; 26 in., $3.50; 30 in., $3.80.
Sledge, ℔ doz., oval, 30 in., $3.80; octagon, 30 in., $3.80; oval, 36 in., $4.00; octagon, 36 in., $4.00.
Axe, ℔ doz., 28 to 34 in., $5.60; 36 in., $5.80.
Adze, ℔ doz., 36 in., $5.80; 36 in., $7.80.
Pick, ℔ doz., R. R., 36 in., $8.00; coal, 34 in., $5.80.
Hatchet, ℔ doz., 12 to 14 in., $2.00.
} Extra 5@10% often given.

Hangers—

NOTE.—Barn Door Hangers are generally quoted per pair, without track and Parlor Door Hangers per double set with track, &c.

Chicago Spring Butt Co.:
Friction.....25%
Oscillating.....25%
Big Twin.....25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door.....50%
Elevator.....30%
Railroad.....50%
Cronk & Carrier Mfg. Co.:
Loose Axle.....60&10%
Roller Bearing.....70%
Griffin Mfg. Co.:
Solid Axle, No. 10, $12.00..60&10%
Roller Bearing, No. 11, $15.00, 60&10%
Roller Bearing, Ex. Hy., No. 22, $18.00.....60&10%
Bull Dog, $24.00.....70%
Lane Bros. Co.:
Parlor, Ball Bearing, $4.00; Standard, $3.15; No. 105, $2.85; New Model, $2.80; New Champion per set of 4 Hangers, complete with track.....$2.25
Barn Door, Standard.....60&10%
Hinged.....net $6.08
Covered.....60&5%
Special.....70&5%
Trolley Hangers and track..50%
Lawrence Bros.:
Cleveland.....70&7½%
Clipper, No. 75.....60%
Crown.....55&10%
Cyclone, No. 40.....net $6.50
Tandem, No. 50.....net $7.50
New York.....55&10%
Trolley, No. 30, ℔ pair.....$1.25
McKinney Mfg. Co.:
Roller Bearing, Nos. 1 and 2..70%
Anti-Friction.....60%
Hinged Hangers King Charm.60%
F. E. Myers & Bro. Stayon; O K; O K Adjustable; Sure Grip; Sure Grip Adjustable; Sure Grip Tandem; Sure Grip Tandem Adjustable; Tandem Adjustable.....60%
Richards Mfg. Co.:
Hangers, Nos. 47, 48, 147, 247, 60&5%
Pioneer Wood Track, No. 3..$2.25
Roller B'r'g St'l Track No. 12.$2.20
Roller B'r'g St'l Track No. 13.$2.50
Roller B'r'g, Nos. 39, 41, 43, 70&7½%
Hero, Adj. Track No. 19..50&10%
Adjustable Track Tandem Trolley Track No. 16.....50&10%
Seal, Steel Track No. 8.....$2.25
Auto Adj. Track No. 22..50&5%
Trolley B, D, No. 17, $1.25; F. D. No. 120, $2.25; No. 121, $2.45; No. 150.....$2.50
Safety Underwriters F. D. No. 101.....50%
Tandem No. 44..2½ and 3 60&10%
Palace, Adjustable Track No. 132.....50&5%
Royal, Adjustable Track No. 122.....50&10%
Ives' Wood Track No. 1.....$2.25
Trolley B, D, No. 20.....50&10%
Trolley B, D, No. 24, $1.30; No. 27, $1.40; No. 28.....$1.60
Roller Bearings, Nos. 37, 38, 39, 41, 43, 44, Sizes 1 and 2.70&7½%
Anti-friction, No. 42; No. 44, sizes 2½ and 3.....60%
Hinged Tandem No. 48....60&5%
Folding Door B. B. Swivel No. 135.....40%
} Extra 5@10% often given.

Hangers— Garment—

Pullman Trouser, ℔ gro., No. 1 $9.00; No. 4, $24.00; No. 5, $16.50; No. 8, Black Enamel, $7.50; No. 10, $21.00; No. 12, $8.00; No. 15, Rods, $9.00; No. 18, Loops.....$10.00
Victor Folding.....℔ gro. $9.60

Joist and Timber—

Lane Bros. Co.....35%

Hasps—

Griffin's Security Hasp.....50&10%
McKinney's Perfect Hasp, ℔ doz..60%

Hatchets—

Regular list, first qual.50&10@60%
Second quality.....60@60&10%

Heaters, Carriage—

Clark, No. 5, $1.25; No. 5B, $1.50; No. 3, $1.75; No. 3D, $2.00; No. 1, $3.00.....25%
Big Hit Assortment, ℔ case....$13.80
Leader, ℔ case.....$9.00
Clark Coal, doz.....$0.75
A B C Coal, doz.....$0.60
Sadiron Coal, box 50 pieces.....$0.75

Hinges—

Blind and Shutter Hinges

Surface Gravity Locking Blind: Doz. Sets with Fastenings, No. 1, $0.75; No. 3, $1.40; No. 5, $2.85.

North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%
Charles Parker Co.....70@75%
Parker Wire Goods Co.
Hale & Benjamin Automatic Blind Hinges.....20%
Hale's Blind Awning Hinges, No. 110, for wood, $9.00; No. 111, for brick, $9.00.....20%

Reading's Gravity.....50&10%
Stanley's Steel Gravity Blind Hinges, No. 1617½, ℔ doz. sets, without screws, $1.00; with screws, $1.30.
Wrightsville Hardware Co.:
O. S., Lull & Porter.....75&5%
Acme, Lull & Porter.....75%
Queen City Reversible.....75%
Shepard's Noiseless, Nos. 60, 65, 55.....75&5%
Niagara, Gravity Locking, Nos. 1, 3 & 5.....75&5%
Clark's O. P., No. 1.....75&10%
Clark's O. P., Nos. 3 and 5....75&5%
Tip Pat'n, No. 1.....75&10%
Clark's No. 3.....75&5%
Buffalo Gravity Locking, Nos. 1, 3 & 5.....70&10&5%
Shepard's Double Locking.....75%
Champion Gravity Locking.....75&5%
Pioneer.....75&10%
Empire.....65%
W. H. Co.'s Mortise Gravity Locking, No. 2.....60&10%

Gate Hinges—

Western:
With Latch.....doz. $1.75
Without Latch.....doz..$1.15

Wrightsville Hardware Co.:
Shepard's or Clark's Hinges and Latches, Hinges only or Latches only, Nos. 1, 2 or 3.....70%

Miscellaneous—

Griffin Mfg. Co., Fleur de Lis Surface Hinges, ℔ doz. prs.....$1.00

Pivot Hinges—

Bommer Bros. Pivot, Ball Bearing.....40%
Lawson Mfg. Co., Matchless..50&10%

Spring Hinges—

Holdback, Cast Iron..$5.25@$5.75
Non-Holdback, C'st Iron$6.50@$6.75

J. Bardsley:
Simplex Spring Hinges.....40%
Bardsley's Patent Checking.33⅓%
Bommer Bros.:
Spring Butt Hinges.....40%
Surface Floor, Ball Bearing.....40%
Mortise Floor, Ball Bearing.40%
Lavatory Hinges.....40%
Non-Holdback Screen Door, Nos. 2000 and 900.....40%
Holdback Screen Door, No. 999.....℔ gro, $9.00
Chicago Spring Butt Co.:
Chicago Spring Hinges.....25%
Triplex Spring Hinges.....50%
Chicago (Ball Bearing) Floor.50
Chicago Engine House.....25%
Lavatory Door Hinges.....50%
Adjustable Screen Door.....60%
Non-Holdback.....65%
Lawson Mfg. Co.:
Matchless Spring Hinges.....30&10&10%
Matchless Jamb Hinges.....30&10&10%
Lavatory.....50&10%
Surface Floor.....60&10%
Richards Mfg. Co.:
Superior Double Acting Floor Hinges.....40%
Shelby Spring Hinge Co.:
Buckeye All Steel Holdback Screen Door.....℔ gr. $9.00
No. 777, Sheet Steel Holdb'k, ℔ gr.....$9.00
No. 888, Non-Holdback, ℔ gro.....$9.00
Chief Ball Bearings Floor Hinge.....50%
Ball Bearing Door.....40%
Superior Spring Hinge Co.:
Superior Floor Hinges.....40%
Spring Hinges.....40%
} Extra 10% often given on most of these Hinges.

Wrought Iron Hinges—

Strap and T Hinges, &c.:
Light Strap Hinges....65%
Heavy Strap Hinges....75%
Light T Hinges.....60%
Heavy T Hinges.....40&10%
Extra Hvy. T Hinges.65&10%
Hinge Hasps.....40%
Cor. Heavy Strap.....75%
Cor. Ex. Heavy T....65&10%
} Extra, 5@10%

Screw Hook and Strap.
6 to 12 in..lb.3¾¢
1½ to 20 in..lb.3½¢
22 to 36 in..lb.3¼¢

Screw Hook and Eye:
¾ to 1 inch.....lb.5½@5¾¢
⅝-inch.....lb.6½@6¾¢
½-inch.....lb.8½@8¾¢

Hitchers, Stall—

Covert Mfg. Co., Stall Hitchers.30&10%

Hods— Coal—

Net, per dozen.

Inch..	*15*	*16*	*17*	*18*
Galv., open....	*$2.15*	*2.40*	*2.55*	*2.80*
Jap., open.....	*1.65*	*1.75*	*1.90*	*2.30*
Galv., funnel...	*2.60*	*2.90*	*3.10*	*3.35*
Jap., funnel....	*2.00*	*2.15*	*2.40*	*2.60*

Masons' Etc.

Cleveland Wire Spring Co.:
Steel Brick, No. 162.....each $1.05
Steel Mortar, No. 158.....each $1.35

Hoes— Eye—

Scovil and Oval Pattern, 60&10@60&10&10%
Grub, list Feb. 23, 1899. 70&10@70&10&10%
D. & H. Scovil.....27½%

Handled—
Cronk's Weeding, No. 1, $2.00; No. 2, $2.50
Star Double Bit.....$2.50

Holders— Bit—
Angular, ₱ doz. $24.00.....45&10%

Broom—
Pullman Broom, ₱ gro.....$9.00

Door—
Bardsley's, Iron, 40%; Bronze.....20%
Empire 50%
Pullman 25%
Richards Mfg. Co.: No. 117, Ever-ready, 40%; Nos. 118, 119, Sure Grip 50%
Superior 40%

File and Tool—
Nicholson File Holders and File Handles .....33⅓@40%

Fruit Jar—
Triumph Fruit Jar Holder, ₱ doz.$2.00

Nipple—
Curtis Nipple Holders.....5%

Trace and Rein—
Fernald Double Trace Holder, ₱ doz. pairs $1.25
Dash Rein Holder, ₱ doz.....$1.25

Hones—Razor—
Pike Mfg. Co., Belgian and Swaty, 50%; German.....33⅓%

Hooks—Cast—
Bird Cage, Reading.....50%
Clothes Line, Reading List.....50&5%
Coat and Hat Iron, Reading.....50%
Coat and Hat, Bronze Metal, Reading 33⅓%
Coat and Hat, Wrightsville.....60&5%
Harness, Reading List.....50%

Wire—
Belt, Nos. 1 to 15...80&5@80&10%
Wire C. & H. Hooks..80@80&10%
Parker Wire Goods Co., King..75&10%
Wire Goods Co.:
Acme, 60&10%; Chief, 75@75&10%; Crown, 75&10@80%; Czar, 70%; Capitol 80%; Czar Harness, 50&10%; Ceiling, 75@80%.

Miscellaneous—
Hooks, Bench, see *Stops, Bench.*
Bush, Light, doz., $6.20; Medium, $6.75; Heavy, $7.65
Grass, best, all sizes, per doz., $2.75@$3.00
Grass, common grades, all sizes, per doz.....$1.25@$1.50
Hooks and Eyes:
Brass .....60@60&10%
Malleable Iron.....70@70&10%
Covert Mfg. Co. Gate and Scuttle Hooks 25%
Turner & Stanton Co. Cup and Shoulder .....85&10%
Bench Hooks—See Bench Stops.
Corn Hooks—See Knives, Corn.

Hose, Rubber—
Garden Hose, ¾-inch:
Competition .....ft. 6@6½¢
3-ply Guaranteed....ft. 8@8½¢
4-ply Guaranteed....ft. 9½@10¢
Cotton Garden, ¾-in., coupled:
Low Grade.....ft. 8@ 9¢
Fair Quality.....ft. 10@11¢

Irons— Sad—
From 4 to 10.....lb. 3@3½¢
Mrs. Potts', cents per set:

	Nos. 50	55	60	65
Jap'd Caps	.86	93	96	93
Tin'd Caps	.91	88	1.01	98

Bar and Corner—
Richards Mfg. Co., Bar, 60&10%; Corner 60%

Jacks, Wagons—
Covert Mfg. Co.:
Auto Screw.....30&10%; Steel, 50%
Lane's Steel.....30&5%
Richards' Tiger Steel, No. 150...50&10%

Ladder—
Richards Mfg. Co., Ladder Jacks..50%

Jointers—
Pike Mfg. Co., Saw Jointers, $7.00..40%

Knives—
Butcher, Kitchen, &c.—
Foster Bros.' Butcher, &c.....30%

Corn—
Columbian Cutlery Co., Wilcut Brand Knives and Hooks.....60%

Drawing—
Standard List.....80@—%
C. E. Jennings & Co., Nos. 45, 46, 25&7½%
Jennings & Griffin, Nos. 41, 42, 66⅔&7½%
Swan's .....66⅔@70%
I. & I. J. White.....20&5@25%

Hay and Straw—
Serrated Edge, per doz. $5.00@5.50
Iwan's Sickle Edge.....₱ doz. $9.00
Iwan's Serrated.....₱ doz. $9.50

Miscellaneous—
Farriers' .....doz. $2.40@$2.80

Knobs—
Base, 2½-inch, Birch or Maple, Rubber Tip.....gro. $1.25@1.40
Door, Mineral.....doz. 65@70¢
Door, Por. Jap'd....doz. 70@75¢
Door, Por. Nickel..doz. $2.05@2.15
Bardsley's Wood Door and Shutters.10%

Ladders, Store, &c.—
Lane's Store.....25%
Myers' Noiseless Store Ladders....50%
Richards Mfg. Co.:
Improved Noiseless, No. 112.....50%
Climax Shelf, No. 113.....50%
Trolley, No. 109.....50%

Ladles, Melting—
L. & G. Mfg. Co.'s list, Melting and Plumbers' 25%
P., S. & W.....40&10%
Reading .....50&10%

Lamps,—
Hammer's M. I. Hand.....45%

Lanterns—Tubular—
Regular, No. 0....doz. $4.00@4.50
Side Lift, No. 0...doz. $4.25@4.75
Hinge Globe, No. 0. doz. $4.25@4.75
Other Styles.....40&5%

Bull's Eye Police—
3-inch .....$3.75@4.00

Latches— Thumb—
Roggin's Latches, Jap'd, with Screws .....doz. 40¢

Door—
Cronk & Carrier Mfg. Co., No. 101, ₱ doz. $2.00
Richards' Bull Dog, Heavy, No. 125 .....50&5%
Richards' Trump, No. 127.....$1.50

Leaders, Cattle—
Small.....doz. 45¢; large, 55¢
Covert Mfg. Co.: Cotton, 55%; Hemp, 45%; Jute, 55%; Sisal, 45%.

Lifters, Transom—
Reading, Iron, 50&5%; Bronze Metal 33⅓%
R. & E.....10%

Lines—
Wire Clothes, Nos. 18 19 20
100 feet.....$2.30 1.95 1.75
75 feet.....$1.95 1.65 1.50
Chalk Lines, Cotton, ½-lb. Balls, per lb.....25@30¢
Mason Lines, Linen, ½-lb. Balls, per lb.....47¢
Samson Cordage Works:
Solid Braided Chalk, Nos. 0 to 3..40%
Solid Braided Masons'.....30%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50.....₱ gr. 30%
Masons' Lines, Shade Cord, &c.; White Cotton, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50; Colors, No. 3½, $1.75; No. 4, $2.25; No. 4½, $2.75; Linen, No. 3½, $2.50; No. 4, $3.50; No. 4½, $4.50.....30%
Tent and Awning Lines: No. 5, White Cotton, $7.50; Drab Cotton, $8.50 .....20%
Clothes Lines, White Cotton: 50 ft., $2.75; 60 ft., $3.25; 70 ft., $3.75; 75 ft., $4.00; 80 ft., $4.25; 90 ft., $4.75; 100 ft., $5.25.....30%
Turner & Stanton Co.:
Solid Braided Chalk, Masons' and Awning Lines.....40%
Clothes Lines, White Cotton.....40%
Shade Cord, Cotton or Linen....30%

Locks— Cabinet—
Cabinet Locks....33⅓@33⅓@5%

Door Locks, Latches, &c.—
NOTE.—Net Prices are very often made on these goods.
Reading Hardware Co.....33⅓
R. & E. Mfg. Co.....10%

Padlocks—
R. & E. Mfg. Co. Wrought Steel and Brass .....75&10%

Sash, &c.—
Ives' Patent:
Crescent 25%
Automatic Gravity Metal Sash, ₱ gro., $149.58.....25%
Window Ventilating.....25%
Pullman Patent Ventilating Lock..25%
Reading Sash Locks, Iron.....50%
Reading Sash Locks, Bronze Metal, 33⅓%

Machines—Boring—
Com. Upr't, without Augers, $2.00@2.25
Com. Angl'r, without Augers, $2.25@2.50
Ford Auger Bit Co.....$22.00
Jennings', Nos. 1 and 4.....25&7½%
Millers' Falls.....5.75
Snell's, Upright, $2.65; Angular, $2.90
Swan's Improved.....40&10%

Corking—
Reisinger Invincible Hand Power... ₱ doz. $48.00

Forming, Bending, Etc—
Royal Forming, Bending, Crimping and Fluting, Hand Power, each, $20.00.....40%

Hoisting—
Moore's Anti-Friction Chain Hoist.30%
Moore's Hand Hoist, with Lock Brake 20%
Moore's Cyclone High Speed Chain Hoist 25%

Ice Cutting—
Chandler's 12½%

Mallets—
Hickory .....45&5@50%
Lignumvitæ .....45&5@50%
Tinners' Hickory and Applewood .....doz. 45&5@50%

Mats, Door—
Acme Flexible Steel.....50%
Elastic Steel (W. G. Co.), new list.50%
Everlasting Flexible Steel.....40%

Mills, Coffee, &c.—
Enterprise Mfg. Co.:
Coffee .....20@25%
Bone, Shell and Corn.....25&10%
Parker's Columbia and Victoria..33⅓%
Parker's Box and Side.....50&10%
Swift, Lane Bros. Co.....30%

Motors, Water—
Pike Mfg. Co., Tool and Knife Grinding 33⅓%

Mowers, Lawn—
NOTE.—Net prices are generally quoted
Cheapest, 10-in., $1.80; advance 10¢ for each size.
Cheap, 10-in., $2.50; advance, 10¢ for each size.
Better Grade, 10-in., $3.25; advance 25¢ for each size.

	12	14	16	18 in.
High Grade	$4.50	4.75	5.00	5.25

Continental, High and Low Wheel, 50&10%
Great American.....66⅔%
Great American Ball Bearing....66⅔%
Quaker City.....66⅔%
Pennsylvania, High and Low Wheel, 50&10%
Pennsylvania, Jr., Ball Bearing 50&5%
Pennsylvania Golf, 6 Knives, Low Wheel, 33⅓%; High Wheel.....45%
Pennsylvania Golf, Ball Bearing, 7 Knives, High Wheel.....33⅓%
Pennsylvania Horse, 30 and 38 inch, 33⅓&5%
Pennsylvania Pony or Two Man.40&5%
Pennsylvania Grand Horse, 30 and 38 in.....33⅓%

Nails—
Wire Nails and Brads, Miscellaneous .....85&10%
Cut and Wire. See *Trade Report.*
Hungarian, Finishing, Upholsterers', &c. See *Tacks.*

Horse—
Jobbers' Special Brands, per lb. 9¢

Picture—

	1½	2	2½	3 in.
Brass Hd, gro.	.45	.55	.60	.70
Por. Head, gro., all sizes....80¢				

Upholsters—
Brass 30%
Plated .....30&10%

Nuts— *Blank or Tapped.*
Cold Punched: Off list.
Square .....5.10¢
Hexagon .....5.70¢
Square, C., T. & R.....5.50¢
Hexagon, C., T. & R.....6.30¢
Hot Pressed: Off list.
Square .....5.50@5.60¢
Hexagon .....5.90@6.00¢

Oakum—
Best .....lb. 6½¢
U. S. Navy.....lb. 6 ¢
Navy .....lb. 5 ¢
Plumbers' Spun Oakum..2¾@3 ¢

Oil—
Pike Mfg. Co., Stonoil.....40%

Oil Tanks—See *Tanks, Oil.*

Oilers—
Steel, Copper Plated.....75&10%
Chase or Paragon:
Brass and Copper.....45&50%
Zinc .....65&10@70%
Railroad .....60&10&10%
American Tube & Stamping Co.:
Spring Bottom Cans.....70@70&10%
Railroad Oilers, &c.....60@60&10%
Hero Fruit Jar Co.:
Spring Bottom Cans.....70@70&10%
Railroad Oilers, etc.....60@60&10%
Malleable, Hammers' Improved, Nos. 11, 12 and 13, 10%; Old Pattern, Nos. 1, 2, 3, 4, 50%.
Maple City Mfg. Co.:
Spring Bottom Cans.....70@70&10%
Railroad Oilers, &c.....60@60&10%

Openers, Can—
Triumph Shear Can Openers, doz..$1.20

Egg—
Hartigan Nickel Plate, ₱ doz., $2.00; Silver Plate, $4.00.

Packing—
Asbestos Packing, Wick and Rope, any quantity.....13¢

Rubber—
(Fair quality goods.)
Sheet, C. I.....11@12¢
Sheet, C. O. S.....11@12¢
Sheet, C. B. S.....12@13¢
Sheet, Pure Gum.....40@45¢
Sheet, Red.....40@50¢
Jenkins' '96, ₱ lb, 80¢.....25%

Miscellaneous—
American Packing....lb. 7@10 ¢
Cotton Packing.....lb. 16@25 ¢
Italian Packing.....lb. 9@10¢
Jute .....lb. 4@4¼¢
Russia Packing.....lb. 9@10¢

Pails, Galvanized—
Net, per dozen.

Quarts..	8	10	12	14	16
Light	$1.45	1.65	1.80	2.00	2.35
Ex. heavy.	...	$2.65	2.85	3.00	3.35
Rd. Bottom Fire Pails	...	1.95	2.10	2.30	...
Well Pails	1.95	2.15	2.35	...	...

Paint—
Dixon's Silica-Graphite, in 1 gal. pails and 5 gal. kegs, 25%; packages of larger size.....20%

Pans— Dripping—
Standard List.....75¢&10&5%

Refrigerator, Galva.—

Inch	12	14	16	18
Per doz....	$2.00	2.25	2.50	2.75

Paper—Building Paper
Per roll.
Rosin Sized Sheathing: 500 sq. ft. Light weight, 25 lbs. to roll..38¢
Medium weight, 30 lbs. to roll. 45¢
Heavy weight, 40 lbs. to roll.60¢
Black Water Proof Sheathing, 500 sq. ft., light weight, 65¢; medium weight, 95¢; heavy weight, $1.30.
Deafening Felt, 9 and 6 sq. ft. to lb., ton.....$40.00
Red Rope Roofing, 250 sq. ft. per roll.....$1.75

Tarred Paper—
1 ply (roll 400 sq. ft.), ton, carloads, $31.00; less than carloads $32.00
2 ply, (roll 108 sq. ft.), 40 lb..48¢
3 ply (roll 108 sq. ft.), 60 lb..68¢
Slater's Felt (roll 500 sq. ft.), per ton, $35.00; per roll.....70¢

Sand Paper and Cloth—
Flint and Emery.....50&10%
Garnet Paper and Cloth....25%

Parers—Apple—
Goodell Co.:
Family Bay State.....₱ doz. $15.00
Improved Bay State.....₱ doz. $36.00
New Lightning.....₱ doz. $7.00
Turn Table '98.....₱ doz. $6.00
White Mountain.....₱ doz. $5.00
Bonanza Improved.....each $7.50
Dandy .....each $10.00
New Century.....each $20.00
Ranger .....each $25.00
Rapid Apple Slicer.....each $100.00
Reading Hardware Co.:
Advance .....₱ doz. $4.00
Baldwin .....₱ doz. $4.00
Reading 72.....₱ doz. $3.25
Reading 78.....₱ doz. $6.25

Orange—
Goodell Co., Success.....each $20.00

Potato—
Saratoga .....₱ doz. $7.00
White Mountain.....₱ doz. $6.00

Picks and Mattocks—

List 75%
Cronk's Handled Garden Mattock, ₱ doz., $6.00 ..... 33⅓%

Pins, Escutcheon—

Brass ..... 50@50&10%
Iron ..... 60@60&10%

Pipe, Cast Iron Soil—

Eastern Prices:
Standard, 2-6 in. 68%
Extra Heavy, 2-6 in. 74%
Fittings, Standard and Heavy 80¾%
Extra, 10 & 10&5%

Pipe, Merchant—

Carloads to Consumers:

	Steel. Blk.	Steel. Galv.	Iron. Blk.	Iron. Galv.
	%	%	%	%
⅛ and ¼ in.				
⅜ in.				
½ in.				
¾ to 6 in.				
7 to 12 in.				

See Trade Report

Pipe, Vitrified Sewer—

Carload lots.
Standard Pipe and Fittings, 3 to 24 in., f.o.b. factory:
First class 85%
Second-class 87%

Pipe, Stove—

	Per 100 joints. C. L.	L. C. L.
Wheeling Corrugating Co.'s Nested		
5 in., Uniform Color	$5.90	$6.90
6 in., Uniform Color	6.40	7.40
7 in., Uniform Color	7.40	8.40

Planes and Plane Irons—

Wood Planes—

Bench, first qual. ..... 30@30&5%
Bench, second qual. ..... 40@40&5%
Molding ..... 25@25&5%
Chapin-Stephens Co.:
Bench, First Quality 30%
Bench, Second Quality 40%
Molding and Miscellaneous 25%
Toy and German 30%
Union 60%

Iron Planes

Union 60%

Plane Irons—

Wood Bench Plane Irons 25%
Buck Bros. 30%
Chapin-Stephens Co. 25%
Union 50%
L. & I. J. White ..... 20&5@25%

Planters, Corn, Hand—

Kohler's Eclipse ..... ₱ doz. $7.50

Plates—

Felloe ..... *lb. 3¾@4¢*
Avery Stamping Co.:
Standard Wrot. Steel Felloe Plates in 100 lb kegs, per 100 lb, ¾-in. to 1¼-in., $4.00 net; 1¼-in. to 2-in., inclusive, $3.75 net.

Steel Pipe Hook—

Never-Break ..... 75&10%

Pliers and Nippers

Button Pliers ..... 75&5@75&10%
Gas Burner, per doz., 5 in., $1.25 @$1.30; 6 in., $1.45, $1.50.
Gas pipe.. 7 — $2.00; 8 — $2.25; 10 — $2.75; 12-in. — $3.50
Acme Nippers 50%
Cronk & Carrier Mfg. Co.:
American Button 60%
Improved Button ..... 75&10%
Cronk's 60%
No. 80 Linemen's 50%
Stub's Pattern 45%
Combination and others 33⅓%
Elmore Tool Mfg. Co.:
Gas Pliers 70%
Wire and Cutting Pliers 75%
Heller's Farriers' Nippers, Pincers and Tools ..... 40@40&10%
P. S. & W. Tinners' Cutting Nippers 20%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds 40%

Plumbs and Levels—

Chapin-Stephens Co.:
Plumbs and Levels ..... 30@30&10%
Chapin's Imp. Brass Cor. ..... 40@40&10%
Pocket Levels ..... 30@30&10%
Extension Sights ..... 30@30&10%
Machinists' Levels ..... 40@40&10%
Disston & Sons:
Shafting Levels ..... 60&10%
Pocket Levels ..... 60&10%
Plumbs and Levels ..... 60&10%
Track Level and Gauge ..... 60&10%

Points, Glaziers'—

Bulk and 1-lb. papers ..... *lb. 10¢*
½-lb. papers ..... *lb. 11¢*
¼-lb. papers ..... *lb. 12¢*

Police Goods—

Manufacturers' Lists..25@25&5%

Polish—Metal, Etc—

Ladd Co.:
Putzade Liquid, ₱ gro., ½ pts., $12.00; 1 pts., $20.00; 1 qts., $40.00; ₱ doz., ½ gals., $6.35; 1 gals., $12.00.
Prestoline Liquid, No. 1 (½ pt.), ₱ doz., $3.00; No. 2 (1 qu.), $5.00..40%
Prestoline Paste 40%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ₱ doz. 50¢; ₱ gro. $4.50; ½ lb boxes, ₱ doz. $1.25; 1 lb boxes, ₱ doz. $2.25.
U. S. Liquid, 8 oz. cans, ₱ doz., $1.25.
Barkeepers' Friend Metal Polish, ₱ doz., $1.75.

Stove—

Black Eagle Benzine Paste, 5 lb cans, ₱ lb 10¢
Black Eagle, Liquid, ½ pt. cans.. ₱ doz. 75¢
Black Jack Paste, ¾ lb cans, ₱ gr. $9.00
Black Kid Paste, 5 lb can...each, $0.65
Ladd's Black Beauty Liquid, per 100 tins $6.75
Joseph Dixon, ₱ gr. $5.75 ..... 10%
Dixon's Plumbago ..... ₱ lb 8¢
Fireside ..... ₱ gr. $2.50
Gem, ₱ gr. $1.50 ..... 10%
Japanese ..... ₱ gr. $3.50
Jet Black ..... ₱ gr. $3.50
Peerless Iron Enamel, 10 oz. cans.. ₱ doz. $1.50

Window Polish—

Benj. P. Forbes:
Glasbright, 1 lb cans, each ..... 75¢
Glasbright, Factory, 10 lb pails, ₱ lb ..... 25¢

Peppers, Corn—

1 qt. Square..doz. $0.75; gro. $8.75
1 qt. Round..doz. $0.90; gro. $10.00
1½ qt. Square..doz. $1.20; gro. $12.00
2 qt. Square..doz. $1.50; gro. $15.00

Pots, Glue—

Enameled ..... 30&10%
Tinned ..... 30&5%

Powder—

Black Sporting:
Kegs (25 lb.)..$5.00@5.50
Half Kegs (12½ lb.), $2.75@3.00
Quarter Kegs (6¼ lb.), $1.50@1.65
Canisters, pounds... .25
Canisters, ½ pounds. .15
Canisters, ¼ pounds. .12
Discount to the trade, 10%.
NOTE.—Prices vary according to territory.

Presses—

Enterprise Mfg. Co., Fruit, Wine and Jelly ..... 20@25%
Lard Presses and Sausage Stuffers ..... 25@25&7½%

Seal Presses—

Morrill's No. 1, ₱ doz., $20.00 ..... 50%
Morrill's Pocket, $20.00 ..... 50%

Pullers, Nail, Etc.—

Elmore Tool Mfg. Co.:
Drop Forged Tack Claws ..... 50&10%
Standard Tack Claws, No. 10 ..... 33⅓&7½%
Nail Pullers 40%
Miller's Falls, No. 3, ₱ doz., $12.00.. 33⅓&10%
Morrill's No. 1, Nail Puller, ₱ doz. $20.00 ..... 50%
Pearson Spike Puller, each, $15.00..25%
Parrot Tack and Stub Pullers, ₱ doz. $1.20
The Scranton Co. Case Lots:
No. 2B (large) $5.50
No. 3B (small) $5.00

Pulleys, Single Wheel—

Inch	1½	1¾	2	3
Awning or Tackle, doz.	$0.30	.45	.60	1.05
Hay Fork, Swivel or Solid Eye, doz., ¼ in., $1.25; 5 in., $1.55				
Inch	2	2¼	2½	
Hot House, doz.	$0.65	.85	1.20	
Inch	1¼	1½	1¾	2
Screw, doz.	$0.16	.19	.23	.30
Inch	1¾	2	2¼	2½
Side, doz.	$0.25	.40	.55	.60
Inch	1½	1¾	2	2½

Sash Pulleys—

Common Frame; Square or Round End, per doz., 1¾ and 2 in. ..... 17@20¢
Auger Mortise, no Face Plate, per doz., 1¾ and 2 in.. .20@21¢
Acme, No. 35..1¾ in., 19¢; 2 in., 20½¢
American Pulley Co.:
Wrought Steel American Plain Axle ..... 50&10%
Wrought Steel, Eagle, ₱ doz., 1¾ in., 17¢; 2 in., 20¢; 2¼ in. ..... 27¢
Top Notch, Electrically Welded, Nos. 3 and 4, ₱ doz. ..... 19¢
Common Sense ..... ₱ doz. 20¢
Merit, ₱ doz., 2½ in. ..... 37¢
Fox-All-Steel, Nos. 3 and 7, 2 in.... ₱ doz. 50%
Grand Rapids All Steel Noiseless..50%
Niagara, No. 25, 1¾ in., 19¢; 2 in. ..... 20½¢
No. 26 Troy..1¾ in., 14½¢; 2 in., 16½¢
Star, No. 26....1¾ in., 19¢; 2 in., 20½¢
Tackle Blocks—see Blocks.

Pumps—

Cistern 60%
Pitcher Spout ..... 75&10&5@80
Wood Pumps, Tubing, &c. 50%
Barnes Mfg. Co.:
Dbl. Acting (low list) 50%
Pitcher Spout 80%
Daisy Spray Pump ..... ₱ doz. $6.50
Goulds Mfg. Co.:
Double-Acting Thresher Tank.. $5.00
Diaphragm No. 3, Side Suction. $14.50
Empire, Advance, Seneca, D. A. Shallow and Deep Well (low list) 50%
Spraying and Whitewashing $2.45
F. E. Myers & Bros. (low lists):
Double Acting Force and Lift; Cistern and Well; House; Windmill; Ratchet Handle; Pump Stands; Hydro-Pneumatic; Bulldozer Power; Spray; Ashland Force and Lift 50%
Thresher Tank—Myers and Faultless Low Down Tank $5.00
Century Low Down Tank, No. 470 ..... $5.25
Century Low Down Ratchet Handle Tank, No. R470 ..... $5.50

Pump Attachments—

Chicago Hdw. & Fdy. Pump Spout Attachments, each $0.27

Pump Leathers—

Plunger and Valve Leathers—Per gro.:

No.	1	2	3	4
	$5.00	6.00	7.00	8.00

Cup Leathers—Per 100:

Inch	2½	3	3½	4
	$5.00	7.00	9.00	12.00

30@30&5%

Punches—

Saddlers' or Drive, good, doz. 60@75¢
Spring, single tube, good quality $1.75
Revolving (4 tubes)....doz. $3.50
Remis & Call Co.'s Cast St'l Drive. 50%
Elmore Tool Mfg. Co.:
Machinists' Center 40%
Tinners': Solid, 50%; Prick 50%
Morrill's Nos. 1AA, 1A, 1B, 1C, 1D, $15.00 ..... 50%
Hercules, 1 die, each $5.00 ..... 50%
Niagara Hollow Punches 40%
Niagara Solid Punches 55%
Tinners' Hollow, P., S. & W. Co.. 25%
Tinners' Solid, P., S. & W. Co., ₱ doz., $1.44 ..... 40&10%

Rail—Barn Door, &c.—

Sliding Door, Painted Iron, 2½@2¾¢
Sliding Door, Wrought Brass, 1⅛ in., lb., 36¢ 30%
Cronk's:
Double Braced Steel Rail..₱ ft. 2¾¢
O. N. T. Rail ..... 2½¢
Griffin's:
xxx, ₱ 100 ft., 1 x 3-16 in., $3.25; 1¼ x 3-16 in., $3.75.
Hinged Hanger, ₱ 100 ft., 1 x 3-16 in., $3.50; 1¼ x 3-16 in., $4.00.
Lane's:
Hinged Track, ₱ 100 ft. $3.45
O. N. T., ₱ 100 ft., 1 in., $3.12½; 1¼ in., $3.45; 1½ in., $4.00.
Standard, 1¼ in. ..... ₱ 100 ft. $4.00
Lawrence Bros.:
1 x 3-16 in., ₱ 100 ft., $7.50; 1¼ x 3-16 in., $8.75 ..... 55&7½%
Trolley, No. 301, ₱ ft. ..... 9¢
McKinney's:
Hinged Hanger Track, ₱ ft., 11¢. 60&5%
1 x 3-16 Track ..... 55&7½%
Myers' Stayon Track ..... 60&10%
Richards Mfg. Co.:
Common, 1 x 3-16 in., $3.00; 1¼ x 3-16, $3.25; 1¼ x 3-16, $3.50.
Special Hinged Hanger Rail..60&10%
Lag Screw Rail, No. 65 ..... 50%
Gauge Trolley Track, ₱ ft., No. 31, 9¢; No. 32, 11¢; No. 35, 20¢.
No. 50 ..... 60&10%
Nos. 61, $3.00; 62, $3.25; 63, $3.50; 64, $4.00; 45, $3.25; 46, $3.50; 40, No. 1, $3.25; 49, No. 2, $3.50.

Rakes—

Cronk's:
Steel Garden: Champion, ₱ doz., 12-tooth, $3.75; 14-tooth, $4.00; 16-tooth, $4.25; Ideal, ₱ doz., 12-tooth, $3.00; 14-tooth, $3.30; 16-tooth, $3.60.
Victor, 12-tooth, $2.25; 14-tooth, $2.50; 16-tooth, $2.75.
Queen City Lawn, ₱ doz., 20 teeth, $2.35; 24, $2.50 ..... net
Anticlog Lawn, ₱ doz. $3.50
Malleable Garden ..... 70&10%
Ideal Steel Garden, ₱ doz., 12 teeth, $15.00; 14, $16.00; 16, $18.00 ..... 80%
Kohler's:
Jumbo Lawn, 36-tooth....₱ doz. $5.00
Lawn Queen, 20-tooth....₱ doz. $2.65
Lawn Queen, 24-tooth....₱ doz. $2.75
Paragon, 20-tooth ..... ₱ doz. $2.40
Paragon, 24-tooth ..... ₱ doz. $2.50
Steel Garden, 14-tooth....₱ doz. $2.40
Malleable Garden, 14-tooth, ₱ doz. $1.75@2.00

Rasps, Horse—

Disston's 75%
Heller Bros. ..... 70&5@70&10&5%
Liveright Bros.' Gold Medal 70%
McCaffrey's American Standard ..... 60&10&5%
New Nicholson ..... 70&10@75%
See also Files.

Razors—

W. H. Compton Shear Co. 30%

Reels, Fishing—

Hendryx:
M 6, Q 6, A 6, B 6, M 9¼, M 16, Q 16, A 16, B 16, 4008, Rubber, Populo, Nickeled Populo 20%
Aluminum, German Silv., Bronze. 25%
1210 N, 124 N 20%
3004 N, 06 N, 6 RM, G 9 ..... 25%
4 N, 6 PN, 24 N, 26 PN 20%
2904 P, 33⅓%; 2904 PN., 33⅓%; 0924 N., 33⅓%; 02084 N., 33⅓%; 002904 PN., 33⅓%; 802 N., 33⅓%; 986 PN, 2904 N, 974 PN 25%
5009 PN, 5009 N 20%
Competitor, 102 P, 102 PN, 202 P, 202 PN, 102 PR, 202 PR 20%
304 P, 304 PN, 00304 P, 00304 PN. 33⅓%

Registers—

Japanned, Electroplated and Bronzed 70%
White Porcelain Enamel..50&10%
Solid Brass or Bronze Metal. 40%

Revolvers—

Single Action ..... *$5¢@$1.00*
Double Action, except 44 cal. $2.00
Double Action, 44 caliber... $2.00
Automatic *$4.00*
Hammerless *$4.50*

Riddles, Hardware Grade

16 in.....per doz. $2.50@$2.75
17 in.....per doz. $2.75@$3.00
18 in.....per doz. $3.00@$3.25

Rings and Ringers—

Bull Rings—

	2	2½	3 inch.
Steel	$0.70	0.75	0.80 doz.
Copper	$1.10	1.25	1.85 doz.

Hog Rings and Ringers—

Hill's Rings, per gro. boxes, $3.60@$4.75; per doz. boxes, 40@45¢
Hill's Ringers, Gray Iron, doz., 55@65¢
Hill's Ringers, Malleable Iron, doz. 85@95¢
Blair's Rings..per gro. $5.50@$6.00
Blair's Ringers..per doz. 65@70¢

Rivets—

Copper Rivets and Burrs, 50@50&10%
Tinners' and Miscellaneous Rivets 80%
Structural, base ..... 2.15¢
Boiler, base ..... 2.25¢

Bifurcated and Tubular—

Assorted in Pasteboard Boxes.
Bifurcated, per dozen boxes, 50 count, 40@45¢; 100 count, 50@63¢.
Tubular, per doz. boxes, 50 count, 60@68¢; 100 count, $1.12@$1.26.

Rollers—

Cronk's Stay, No. 50 ..... $1.00
Cronk's Brinkerhoff No. 55, $0.60; No. 56, $0.75; No. 60 ..... $0.75
Lane's Stay 40%
Myers' Stay 60%
Richards' Stay:
Handy Adj. and Reversible No. 53. 75¢
O. K. Adj. and Reversible No. 58. 50¢
Lag Screw, Nos. 55 and 57 ..... 50%
Underwriters', Nos. 59, 60 ..... 50%
Favorite, No. 54 ..... 60%

Rope—

Manila, 7-16 in. diam. and larger: Highest Grade..... lb. 8@8¼¢
Lower Grades..... lb. 7¼@7¾¢
Sisal, 7-16 in. diam. and larger: Highest Grade..... lb. 7¼@7¾¢
Commercial Grade. lb. 6¼@6¾¢
Sisal, Hay, Hide and Bale Ropes, Medium and Coarse: Pure ..... *lb. 7¾@8¢*
Sisal, Tarred, Medium Lath Yarn: Pure ..... *lb. 6¾@7¢*
Cotton Rope: Best, ¼-in. and larger..18@22¢
Medium, ¼-in. and larger. 16¼¢
Common, ¼-in. and larger...8¢
In coils, ½¢ advance.
Jute Rope: Rove, No. 1, ¼-in. and up. lb. ..... *5@5½¢*

Wire Rope—

Galvanized ..... *47½&2½%*
Plain ..... *55&2½%*

Ropes, Hammock—

Covert Mfg. Co.:
Jute, $0.75@$0.83; Sisal....$0.82@$0.90

Rules

Boxwood .....60&5%
Ivory .....25&5%

Chapin-Stephens Co.:
Boxwood 60%
Flexifold 40%
Ivory .....25@25&10%
Miscellaneous .....50@50&10%
Stephens' Combination 55%
Stationers' .....50@50&10%

Keuffel & Esser Co.:
Folding, Wood .....35&10%
Folding, Steel .....33⅓&10%

Lufkin's Steel .....50&10%
Lufkin's Lumber .....50&10%
Upson Nut Co.:
Upson Nut Co., Boxwood .....60&5%

Saws—

Atkins':
Circular 45%
Band .....50@50&10%
Butcher Saws 50%
Cross Cuts 35%
One-Man Cross Cut 40%
Narrow Cross Cut 50%
Hand, Rip and Panel .....35&5%
Miter Box and Compass 40%
Mulay, Mill and Drag 45%
Wood Saws .....40&10%

Chapin-Stephens Co.:
Turning Saws and Frames .....30@30&10%

Disston's:
Circular, Solid and Ins'ted Tooth 50%
Band, 2 to 18 in. wide 60%
Band, ¼ to 1¾ 60%
Crosscuts 45%
Narrow Crosscuts 50%
Mulay, Mill and Drag 40%
Framed Woodsaws 25%
Woodsaw Blades 25%
Woodsaw Rods, Tinned 15%
Hand Saws, Nos. 12, 99, 9, 16, d100, D8, 120, 76, 77, 8 .....25%
Hand Saws, Nos. 7, 107, 107½, 3, 1, 0, 00, Combination 30%
Compass, Key Hole, &c 25%
Hand Ice Saws 45%
Butcher Saws and Blades 30%

C. E. Jennings & Co.'s:
Back Saws 16⅔%
Butcher Saws .....25&7½%
Compass and Key Hole Saws, 33⅓&7½%
Framed Wood Saws .....25&7½%
Hand Saws 12½%
Wood Saw Blades .....33⅓&7½%

Millers Falls:
Butcher Saws .....15&10%
Star Saw Blades .....15&10%

Massachusetts Saw Works:
Victor Kitchen Saws .....40&10&50%
Butcher Saws Blades .....35@40%
Peace & Richardson's Hand Saws 30%

Simonds':
Circular Saws 45%
Crescent Ground Cross Cut Saws 30%
One-Man Cross Cuts .....40&10%
Gang Mill, Mulay and Drag Saws 40%
Band Saws 50%
Back Saws .....25@25&7½%
Butcher Saws .....35@35&7½%
Hand Saws .....25@25&7½%
Hand Saws, Bay State Brand 45%
Compass, Key Hole, &c .....25@25&7½%
Wood Saws .....40&7½%

Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws 50%

Hack Saw Blades and Frames—

Atkins' Hack Saw Blades A A A 40%
Disston's:
Concave Blades 25%
Chromol Blades 35%
Hack Saw Frames 30%

Simonds, 35%; Bay State, 40%; Culley 35%

C. E. Jennings & Co.'s:
Hack Saw Frames, Nos. 175, 180 .....40&7½%
Hack Saws, Nos. 175, 180, complete, 40&7½%

Goodell's Hack Saw Blades .....40&10%
Griffin's Hack Saw Frames .....35&5&10%
Griffin's Hack Saw Blades .....35&5&10%
Griffin Co. Hack Saw Blades 50%
Star Hack Saws and Blades .....15&10%
Sterling Hack Saw Blades .....30&10&5%
Sterling Hack Saw Frames .....30&10&10%
Sterling Power Hack Saw Machines, each, No. 1, $25.00; No. 2, $30.00 .....10%
Victor Hack Saw Blades 20%
Victor Hack Saw Frames 40%
Victor Hack Saw Machines, each .$75.00

Scroll—

Barnes, No. 7, $15 .....25%
Barnes' Scroll Saw Blades 40%
Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20 .....20%
Lester, complete, $10.00 .....15&10%
Rogers, complete, $3.50 and $4.00 .....15&10%

Scales—

Union Platform, Plain .$2.10@2.20
Union Platform, Stpd .$2.20@2.30

Chatillon's:
Eureka 25%
Favorite 40%
Grocers' Trip Scales 50%

Reading Hardware Co. .....50&5%
The Standard Portables 40%
The Standard R. R. and Wagon .....50&10%

Scrapers—

Chapin-Stephens Co., Box .....30@30&10%
Richards Mfg. Co., Foot 60%

Screws—Bench and Hand

Bench, Iron, doz., 1 in., $2.50@2.75; 1½, $3.00@3.25; 1¾, $3.50@3.75
Bench, Wood .....20@20&10%
Hand, Wood .....70&10@70&10&10%
Chapin-Stephens Co., Hand .....70@70&10&2½%

Coach, Lag and Hand Rail—

Lag, Cone Point .....75&10%
Coach, Gimlet Point .....75&5%
Hand Rail .....70&10@75%

Jack Screws—

Standard List .....70&10@75%
Millers Falls .....50&10&10%

Machine—

Cut Tread, Iron, Brass or Bronze:
Flat Head or Round Head, 50@50&10%
Fillister Head .....40@40&10%
Rolled Thread, F. H. or R. H., Iron .....75&10%
F. H. or R. H., Brass, Nos. 8 to 14 .....65&10%

Set and Cap—

Set (Iron) .....75&10&7½%
Set (Steel), net advance over Iron 25%
Sq. Hd. Cap .....70&10&7½%
Hex. Hd. Cap .....70&10&7½%
Rd. Hd. Cap .....50&7½%
Fillister Hd. Cap .....60&7½%

Wood—

List July 23, 1909.

Flat Head, Iron .....87½&5@..%
Round Head, Iron .....85&5@..%
Flat Head, Brass .....80&5@..%
Round Head, Brass .....77½&5@..%
Flat Head, Bronze .....75&5@..%
Round Head, Bronze .....72½&5@..%
Drive Screws .....87½&5@..%

Scythes— *Per doz.*

Plain Grass, Cutting Edge Polished .....$6.25@$6.50
Clipper, Bronzed Web .....$6.50@$6.75
Solid Steel, Web and Backs Polished .....$7.00@$7.25
Bush, Weed and Bramble, Painted .....$6.50@$6.75
Grain, Painted, Cutting Edge Polished .....$8.25@$8.50
Clipper Grain, Bronze Web .....$8.50@$8.75

Seeders, Raisin—

Enterprise .....25@30%

Sets— Awl and Tool—

Fray's Hollow Tool Handles, Nos. 1, $12; 2, $16; 3, $12 .....50%
Millers Falls Adj. Tool Handles, No. 1, $12; No. 4, $12; No. 5, $18 .....20&10%

Sets, Nail—

Octagon .....*gro. $3.50@3.75*
Buck Bros. 27½%
Elmore Tool Mfg. Co. 30%
Mayhew's .....℔ gro. $9.00
Snell's Corrugated, Cup Pt. .....40&10%
Snell's Knurled, Cup Pt. .....40&10%
Victor Knurled, Cup Pt. .....℔ gro. $7.50

Rivet—

Regular list .....75@75&10%

Saw—

Atkin's:
Criterion 40%
Adjustable 40%
Disston's Star, Monarch and Triumph 30%
Giant Royal Cross Cut .....℔ doz. $6.00
Morrill's No. 1 .....$15.00
Nos. 3 and 4, Cross Cut $20.60
No. 5, Mill $30.00
Nos. 10, 11, 95 .....$15.60
No. 1 Old Style $10.00
Special $16.25
Royal, Hand .....℔ doz. $3.50
Seymour Smith & Son's 65%
Tabitor Positive .....℔ doz. $6.75

Sharpeners, Knife—

Pike Mfg. Co.:
Fast Cut Pocket Knife Hones, ℔ doz. $1.50
Mounted Kitchen Sand Stone, ℔ doz. $1.50
Natural Grit Carving Knife Hones, ℔ doz. $3.00
Quick Cut Emery Carving Knife Hones, ℔ doz. $1.50
Quick Edge Pocket Knife Hones, ℔ doz. $2.50

Lawn Mower—

Pike Mfg. Co., 12, 14, 16, 18 and 20 in., doz., $6.00 .....33⅓%

Shavers, Beef—

Enterprise Mfg. Co. .....25@30%

Shaves, Spoke—

Iron .....*doz. $1.25*
Wood .....*doz. $2.00*
Chapin-Stephens Co. .....30@30&10%
Millers Falls Co. ℔ doz., $9.00 .....15&10%
Seymour Smith & Son's 50%

Shears—

	7	8	9 in.	
Cast Iron				
Best	$16.00	18.00	20.00	gro.
Good	$13.00	15.00	17.00	gro.
Cheap	$5.00	6.00	7.00	gro.

Straight Trimmers, &c.:
Best quality Jap .....70&10&5%
Best Quality Nickel .....60&10&5%
Tailors' Shears .....40@40&10%
Acme Cast Shears 40%
Columbian Cutlery Co.:
Sheep, 1900 list .....30&10&5%
Grass .....50&10%
Horse or Mule .....50&10%
W. H. Compton Shear Co.:
Japan Handles, Nickel Blades, 60&10&5%
Full Nickel .....50&10&5%
Tailors' 30%
J. Wiss & Sons Co.:
Best Quality Jap'd .....60&10%
Best Quality Nickeled .....50&10%
Tailors' 25%

Tinners' Snips—

Steel Blades .....20&5@20&10%
Steel Laid Blades .....30&10%
Acme Cast Snips 40%
W. H. Compton Shear Co., Forged Steel Handles 35%
Jennings & Griffin Mfg. Co.'s 6½ to 10 in. .....33⅓&7½%
Niagara Snips 40%
P. S. & W. Forged Handles 25%
Forged Handles, Steel Blades, Samson .....40@40&5%
Triumph Stove Pipe, doz. $6.00
J. Wiss & Sons Co.:
Wiss Forged Steel 25%

Pruning Shears—

Columbian Cutlery Co.:
Hedge, Wilcut Brand .....60&10%
Lawn and Border, Wilcut Brand, 60&10%
W. H. Compton Shear Co., Dropped Forged Steel 35%
Cronk's Hand Shears 33⅓%
Cronk's Wood Handle Shears 33⅓%
Disston's Combined Pruning Hook and Saw, ℔ doz, $18.00 .....25%
Disston's Pruning Hook only, ℔ doz., $12.00 .....25%
J. T. Henry Mfg. Co.:
Pruning Shears, all grades 40%
P. S. & W. Co. 40%
Seymour Smith & Son's:
Hand Shears 70%
Standard Tree Pruners .....75&10%
Wood Handle Pruning Shears 40%

Sheaves— Sliding Door—

Reading 40%
R. & E. list 15%

Sliding Shutter—

Reading list 40%
R. & E. list 15%

Shells—Empty—

Brass Shells, Empty:
Climax, 10 and 12 gauge .....60&5%
Club, Rival, 65&5%; First Quality, 60&5%

Paper Shells, Empty:
New Rapid, 10, 12, 16 and 20 gauge, 30%
Climax, 10 and 12 gauge; Repeater grade, 10, 12, 16 and 20 gauge; Repeater grade, 30%
New Club, 10 and 12 gauge, Rival Grade, 35%
New Climax, Defiance, 10, 12, 14, 16 and 20 gauge; Climax, 14, 16 and 20 gauge, 20%
Nitro Club, 10, 12, 16 and 20 gauge; New Club, 14, 16 and 20 gauge; Repeater Grade, 20%

Shells, Loaded—

Loaded with Black Powder 40%
Loaded with Smokeless Powder, medium grade .....40&5%
Loaded with Smokeless Powder, high grade .....40&10&10%

Union Metallic Cartridge Co.:
New Club, Black Powders 40%
Nitro Club, Smokeless Powders .....40&5%
Arrow, Smokeless Powders .....40&10&10%
Winchester:
Smokeless Repeater Grade .....40&5%
Smokeless Leader Grade .....40&10&10%
Black Powder 40%

Shingles, Metal— Per Sq.

Wheeling Corrugating Co.:

Dixie, 14 x 20 in.	.....$4.05	$5.05
Dixie, 10 x 14 in.	..... 4.25	5.45
Dixie, 7 x 10 in.	..... 5.25	6.70

Shoes, Horse, Mule, &c.—

F.o.b. Pittsburgh:
Iron .....*per keg $4.10*
Steel .....*per keg $3.85*
Burden's, all sizes .....℔ keg $3.90

Shot—

	25-lb. bag.
Drop, up to B	$1.70
Drop, B and larger	1.95
Buck	1.95
Chilled	1.85
Dust	2.30

Shovels and Spades—

Association List .....40&7½@40&10%
Avery Stamping Co. 40%

Snow Shovels—

Long Handle .....$2.50@$2.75
Wood and Mail, D Handle .....$2.65@$2.90

Sieves and Sifters—

Hunter's Imitation, gro. $9.50
Hunter's Genuine, per gro. $12.00

Sieves, Seamless Metallic

	Per dozen.			
Mesh	1¼	16	18	20
Iron Wire	$1.05	1.05	1.10	1.20
Tinned Wire	$1.15	1.15	1.20	1.30

Sieves, Wooden Rim—

Nested, 10, 11 and 12 Inch.
Mesh 18, Nested .....*doz. $0.90@0.95*
Mesh 20, Nested .....*doz. $1.00@1.05*
Mesh 24, Nested .....*doz. $1.30@1.40*

Sinks, Cast Iron—

Painted, Standard list:
12 x 12 to 22 x 36 in. 60%
20 x 24 to 24 x 50 in. 50%
24 x 60 to 24 x 120 in. 30%
Barnes' low list, all sizes up to 20 x 40, 60%; larger sizes 55%

NOTE.—There is not entire uniformity in lists used by jobbers.

Steel—

Steel Sinks, L. & G. list 60%

Skeins, Wagon—

Cast Iron .....70@70&10%
Steel .....35@40%

Slates, School—

Factory Shipments.
"D" Slates .....50@50&10%
Eureka, Unexcelled Noiseless .....60&7 tens.
Victor A, Noiseless .60&4 tens &5%

Sleds—

Little Giant Folding, ℔ doz. $12.00

Snaps, Harness—

German .....40@40&10%
Covert Mfg. Co.:
Polo, King .....25&10%
High Grade, Covert, Trojan .....30&10&10%
Yankee, Queen, Yankee Roller .....30&10%

Snaths—

Grass Scythe .....50@50&5%

Spoons and Forks—

Silver Plated—

Good Quality .....50&10@60&5%
Cheap .....60@60&10%
International Silver Co:
1847 Rogers Bros. .....40&10%
Rogers & Bro., William Rogers' Eagle Brand .....50&10%
Anchor, Rogers Brand 60%
Wm. Rogers & Son .....60&10%

Miscellaneous

German Silver .....60@60&5%

Tinned Iron—

Teas .....*per gro. 50@55¢*
Tables .....*per gro. $0.90@$1.00*

Springs— Door—

Bardsley's Spring and Check 33⅓%
Chicago (Coil) .....40&10%
Pullman Door (Coil), ℔ gro. $10.00
Pullman Gate 10%
Reliance (Coil) .....40&10%

Carriage, Wagon, &c.—

1¼ in. and Wider: *Per 100 lb.*
Black .....*$4.75@$5.00*
Half Bright .....*$4.75@$5.00*
Bright .....*$5.25@$5.50*
Painted Seat Springs:
1½ x 2 x 26 .....*per pair .45@47¢*
1½ x 3 x 28 .....*per pair .68@71¢*

Sprinklers, Lawn—

Enterprise .....25@30%
Hero Fruit Jar Co., ℔ doz. $4.50
Philadelphia No. 1, ℔ doz, $12; No. 2, $15; No. 3, $20 .....30%

Squares—

Nickel plated } *New List, See*
Steel and Iron } *Trade Report.*
Rosewood Hdl. Try Square and T-Bevels .....60&10&10&10%
Iron Hdl. Try Squares and T-Bevels .....40&10&10&10&10%
Disston's Try Squares and Bevels, 60&10%

Squeezers, Lemon

Wood, Porcelain Lined:
Cheap .....*doz. $1.00*
Good Grade .....*doz. $1.25*
Tinned Iron .....*doz. $0.75@1.00*
Iron, Porcelain Lined .....*doz. $1.75*
Victor, ℔ gro. $9.00

Staples—

Barbed Blind .....85&5@85&10%
Electricians' .....80&10&10@85%
Fence Staples, Polished, $1.80:
Galvanized *$2.10*
Poultry Netting Staples .....*per lb. 3¼@3½¢*

Steels, Butchers'—

Dick's 30%
Foster Bros. 30%

Steelyards— .....&10%

Stocks and Dies—

Blacksmiths' .....50@50&10%
Curtis Reversible Ratchet Die Stock..25%
Derby Screw Plates.....25%
Green River.....25%
Lightning Screw Plate.....25%
Little Giant.....25%
Reece's New Screw Plate.....25%

Stoners, Cherry—

Enterprise .....25@30%

Stones, Axe—

Pike Mfg. Co., Axe Stones (all kinds) 33⅓%

Glass Cutters' Stones—

Pike Mfg. Co., Glass Cutters' Stones and Supplies.....40%

Stones, Oil, &c.—

Pike Mfg. Co., 1907 list: ℔ lb
Arkansas St. No. 1, 3 to 5½ in..$2.80
Arkansas St. No. 1, 5½ to 8 in..$3.50
Arkansas Slips No. 1.....$4.00
Lily White Washita, 4 to 8 in..60¢
Rosy Red Washita, 4 to 8 in..60¢
Washita St., Extra, 4 to 8 in..50¢
Washita St., No. 1, 4 to 8 in..40¢
Washita St., No. 2, 4 to 8 in..25¢
Lily White Slips.....90¢
Rosy Red Slips.....90¢
Washita Slips, Extra.....80¢
Washita Slips, No. 1.....70¢
Washita Slips, No. 2.....40¢
India Oil Stones (entire list)...33⅓%
Quickcut Emery and Corundum Oil Stone, Double Grit.....40%
Quickcut Emery and Corundum Axe Stone, Double Grit.....33⅓%
Quickcut Emery Rubbing Bricks..40%
Hindostan No. 1, R'g'lar. ℔ lb 8¢
Hindostan No. 1, Small..℔ lb 10¢
Turkey Oil Stones, Extra, 5 to 8 in.....℔ lb 80¢
Queer Creek Stones, 4 to 8 in..20¢
Queer Creek Slips.....40¢
Sand Stone.....6¢

Dis. 33⅓%

Scythe Stones—

Pike Mfg. Co., 1907 list:
Black Diamond S. S..℔ gro. $12.00
Lamoille S. S.....℔ gro. $11.00
White Mountain S. S.℔ gro. $9.50
Green Mountain S. S.℔ gro. $7.00
Extra Indian Pond S. S.℔ gro. $8.00
No. 1 Indian Pond S. S.℔ gro. $7.50
No. 2 Indian Pond S. S.℔ gro. $5.00
Leader Red End S. S.℔ gro. $5.00
Quick Cut Emery....℔ gro. $10.00
Pure Corundum.....℔ gro. $18.00
Crescent.....$7.00
Emery Scythe Rifles, 2 Coat. $8.80
Emery Scythe Rifles, 3 Coat. $11.00
Emery Scythe Rifles, 4 Coat. $13.20
Balance of 1907 list 33⅓%.
Lectro (Artificial), ℔ gro., $12.00 33⅓%
$12.00 .....33⅓%
Lightning (Artificial), ℔ gro., $18.00 .....33⅓%

Dis. 33⅓%

Stoppers, Bottle—

Victor Bottle Stoppers.....℔ gro. $9.00

Stops—Bench—

Millers Falls.....15&10%
Morrill's, ℔ doz., No. 1, $10.00....50%
Morrill's, No. 2, $12.50.....50%
Seymour Smith & Son's.....60%

Door—

Chapin-Stephens Co.....50@50&10%

Plane—

Chapin-Stevens Co.....20%

Straps—Box—

Acme Embossed, case lots..20&10&10%
Cary's Universal, case lots...20&10&10%

Stroppers, Razor—

Pullman Safety Razor Blade, doz.$8.50

Stuffers, Sausage—

Enterprise Mfg. Co., Stuffers and Lard Presses.....25@25&7½%
P. S. & W. Co.....40&10&5%

Swings, Lawn—

Myers' Low Down Roller.....$6.25

Tacks, Finishing Nails, &c.

*American Carpet Tacks.*90&25@—%
American Cut Tacks..90&25@—%
Swedes' Cut Tacks...90&30@—%
Swedes' Upholsterers'.90&35@—%
Gimp Tacks.....90&35@—%
Lace Tacks.....90&35@—%
Trimmers' Tacks.....90&30@—%
Looking Glass Tacks.....65@—%
Bill Posters' and Railroad Tacks, 90&40@—%
Hungarian Nails.....80@—%
Finishing Nails.....70@—%
*Trunk and Clout Nails.*75&5@—%
NOTE.—The above prices are for Straight Weights.
See also Nails, Wire.

Double Pointed—

Double Pointed Tacks, 90&4tens@90&5tens%

Tapes, Measuring—

American Asses' Skin....50@—%
Patent Leather.....25@30@5%
Steel .....33⅓@5%
Chesterman's .....25@25@5%
Keuffel & Esser Co.:
Favorite, Ass Skin.....40&10@50%
Favorite, Duck and Leather.....25&5@25&10%
Metallic and Steel, lower list, 35@35&5%; Pocket, 35@35&5%.
Lufkins:
Asses' Skin.....40&10@50%
Metallic .....30@30&5%
Patent Bend, Leather...25&5@25&10%
Pocket .....40@40&5%
Steel .....33⅓@35%
Wiebusch & Hilger:
Chesterman's Metallic, No. 34L, etc. 25%
Chesterman's Steel, No. 1038L, etc. 35%

Teeth, Harrow—

Steel Harrow Teeth, plain or headed, ⅝-inch and larger per 100 lb......*$2.55@$2.80*

Thermometers—

Tin Case, Cabinet, Flange, Dairy, &c......30@35%

Ties, Bale—Steel Wire—

Single Loop.....82½&10%
*Monitor, Cross Head, &c.*70&2½%

Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

Tops, Chimney—

Iwan Volcano Chimney Tops.....55%

Tools—Coopers'—

L. & I. J. White.....20@20&5%

Ice Tools—

Gifford-Wood Co.....15%

Saw—

Atkins' Cross Cut Saw Tools.....35%
Simond's Improved.....33⅓%
Simonds' Crescent.....50%

Ship—

L. & I. J. White.....25%

Torches—

Hammers, Engine, ℔ doz.....$4.50

Traps—Fly—

Balloon, Globe or Acme, doz., $1.15@$1.25; gro.....$11.50@12.00
Harper, Champion or Paragon, doz., $1.25@1.40; gro.$13.00@13.50

Game—

Imitation Oneida.....75@10%
Newhouse .....50&5%
Hawley & Norton.....65&10%
Victor .....75@75&10%
Oneida Community Jump.....70&5%
Stop Thief.....60%
Tree Trap.....60%
Hector .....75@75&5%

Mouse and Rat—

Mouse, Wood, Choker, doz. holes, 12¢
Mouse, Round or Square Wire, doz..85@90¢

Trowels—

Disston Brick and Pointing.....25%
Disston Plastering.....20%
Disston "Standard Brand" and Garden Trowels.....30%
Kohler's Steel Garden Trowels, ℔ gro., 5 in., $4.80; 6 in., $6.00.
Never-Break, Forged Steel Garden Trowels, in 1 doz. boxes, ℔ gro, $6.50
Wm. Rose & Bros., Bricklayers' and Plasterers'.....25&5%
Woodrough & McParlin, Plastering.25%

Trucks, Warehouse, &c.—

McKinney Trucks.....each, net $10.00

Tubs, Wash—

Net, per gross.

	No. 0	1	2	3
Galvanized..	$39.00	48.00	55.00	62.00

Twine, Miscellaneous—

Flax Twine:
No. 9, ¼ and ½-lb. Balls.21@23¢
No. 12, ¼ and ½-lb. Balls.19@21¢
No. 18, ¼ and ½-lb. Balls.16@18¢
No. 24, ¼ and ½ -lb. Balls. 15½@17½¢
No. 36, ¼ and ½-lb. Balls.15@17¢
Cotton Mops, 6, 9, 12 and 15 lb. to doz.....8½@21¢
Cotton Wrapping, 5 Balls to lb. according to quality....12@23¢
American 2-Ply Hemp, ¼ and ½-lb. Balls.....12½@18¢
American 3-Ply Hemp, 1-lb Balls.....18¼@19¢
India, 2-Ply Hemp, 1½-lb. Balls. Balls (Spring Twine)...7½@9¢
India 3-Ply Hemp, 1-lb. Balls 7¼@9¢
India 2-Ply Hemp, 1½-lb. Balls. 7@8½¢
2, 3, 4 and 5-Ply Jute, 1½-lb. Balls.....9@11¢
No. 264 Mattress, ¼ and ½ lb. Balls, according to quality. 30@60¢
Wool, 3 to 6 ply....B 6¢; A 7½¢

Vises—

Solid Box.....60@60&5%

Parallel—

Fisher & Norris Double Screw Leg, each, Nos. 2, $10.50; 3, $16.00; 4, $20.50; 5, $27.00; 6, $32.00.....20%
Fisher-Brooks Bench and Woodworkers' Vises, No. 0, $3.80; No. 1, $5.90; No. 2, $8.25; No. 3, $10.50; No. 4, $13.50.....40%
Merrill's 25%
Millers Falls Oval Slide Pattern.60&10%
Parker's:
Victor, 20@25%; Regulars....20@25%
Vulcan's .....40@45%
Combination Pipe.....55@60%
Prentiss Vise Co.:
Patent, Bicycle, Shepard, Gipsy, Adj. Column, Lewis Adj. Jaw..25%
Rapid Transit, Heavy Chipping..30%
Bull Dog, Anchor Line, Yankee Quick Lever, Lewis Solid Jaw Eclipse Wrench Attachment...40%
Monarch 45%
Vise Jaw Cap.s 10%
Pullman Automatic Bench, ℔ doz., No. 1, $7.50; No. 2.....$9.50

Pipe—

Curtis & Curtis Malleable.....25%
Parker's Combination:
87 Series, 60%; 187 Series, 60&5%; No. 870, 40%.
Prentiss Vise Co.:
Blake Combination, Prentiss Combination, Prentiss.....60%
Malleable; Monarch Combination 65%
Rex Combination.....70%
Peerless Pipe Grip.....25%

Saw Filers

Disston's D 3 Clamp and Guide, ℔ doz., $24.00, 30%; Clamps.....30%
Reading .....50&10%

Wood Workers—

Prentiss Cabinet Makers'.....40%
Wyman & Gordon's Quick Action, 6 in., $6.00; 9 in., $7.00; 14 in., $8.00.

Wads—*Price per M.*

B. E., 11 up.....60¢
B. E., 9 and 10.....70¢
B. E., 8.....80¢
B. E., 7.....80¢
P. E., 11 up.....$1.00
P. E., 9 and 10.....1.25
P. E., 8.....1.50
P. E., 7.....1.50
Ely's B. E., 11 and larger.$1.70@1.75
Ely's P. E., 12 to 20....2.00@3.25

Dis. 15%

Ware, Hollow—Cast Iron, Hollow—

Stove Hollow Ware:
Enameled .....45&10%
Ground .....50&5%
Plain or Unground.....60%
Country Hollow Ware, per 100 lbs .....*$2.75@$3.00*
White Enameled Ware:
Maslin Kettles.....65&10%
Covered Wares:
Tinned and Turned.....35&10%
Enameled .....45&10%
See also *Pots, Glue.*

Enameled—

Agate Nickel Steel Ware.....33⅓%
El-an-ge .....60&10%
Iron Clad Ware.....70&10%
Lava and Volcanic, Enameled..40&10%

Tea Kettles—

Galvanized Tea Kettles:

Inch	6	7	8	9
Each	45¢	50¢	55¢	65¢

Steel Hollow Ware—

Avery Stamping Co.:
Never-Break Spiders and Griddles .....65&10%
Steel Kettles, Maslins Scotch Bowls, Tin'd.....60%
Steel Stew Pans, Stew Pots, etc., Porcelained 50%
Cleveland Stamping & Tool Co.:
Solid Steel Spiders and Griddles .....65&5%
Solid Steel Kettles.....60&5%

Warmers, Foot—

Pike Mfg. Co., Soapstone....10@40&10%

Washboards—

No.	℔ doz.
800—Brass King, Single Surface, Open Back	$3.00
801—Brass King, Single Surface, Open Back	$2.50
802—Brass Junior, Single Surface, Open Back	$2.25
862—White Hen, Spiral Crimp Glass	$3.15
964—Royal Blue Enamel, Single Surface, Ventilated Back	$3.25
172—Our Best, Single Zinc, Soap Drainer	$3.25
722—Soap Saver, Single Zinc, Iron Top	$3.35
100—Northern Queen, Single Zinc, Perforated, Open Back	$3.00
134—Universal, Single Zinc, Extra Family Size Ventilated Back	$2.80
710—Regal, Single Zinc, Extra Family Size, Ventilated Back	$2.50
700—Banner Globe, Single Zinc, Ventilated Back	$2.25
57—Peerless, Double Zinc, Spring Protector	$3.70
56—Red Cross, Double Zinc, Swing Protector	$3.60
17—North Star, Solid Zinc, Swing Protector	$3.60
797—Jewel, Single Zinc, Pail Size.	$1.25

Washers—Leather, Axle—

Solid .....90@90&10%
Patent .....90@90&5%
Coil: ⅜ 1 1¼ 1¼ *inch.*
9¢ 10¢ 11¢ 14¢ *per box.*

Iron or Steel—

Size bolt.... 5-16 ⅜ ½ ⅝ ¾
Washers....$4.90 4.00 2.70 2.50 2.30
The above prices are based on $6.50 off list.
In lots less than one keg add ½¢ per lb.; 5-lb. boxes add ½¢ to list.
Avery Stamping Co.:
Standard, in 200 lb kegs, $6.00 ℔ 100 lb. discount; in 100 lb kegs add 10¢ net ℔ 100 lb; in 5 or 10 lb boxes, add 50¢ net ℔ 100 lb; in 1 lb boxes, add $1.00 net ℔ 100 lb.

Cast Washers—

Over ½-inch, barrel lots, per lb..1½@1¾¢

Wedges—

Oil Finish.....*lb.*, 2¼@2¾¢

Weights—Hitching—

Covert Mfg. Co.....25%

Sash—

Eastern market.....*$25.00@$26.00*
Middle West.....*$24.00@$26.00*

Wheels, Corundum and Emery—

Pike Mfg. Co., Corundum, 65%; Emery 75%

Well—

8-in., $2.00; 10-in., $2.30; 12-in., $3.00; 14-in., $4.45.

Wire and Wire Goods—

Market and Stone Wire in Bundles—

Bright and Annealed:
9 and coarser.....80%
10 to 18.....80&10%
19 to 26.....80&10&2½%
27 to 36.....80&5%
Galvanized:
9 and coarser.....75&10%
10 to 16.....75&10%
17 to 26.....72½&10%
27 to 36.....72½%
Coppered:
9 and coarser.....75&10%
10 to 26.....75&10%
27 to 36.....70&10&5%
Tinned:
6 to 18.....75&10&10%
Brass.....15¾¢ *lb., base*
Copper .....14½¢ *lb., base*
Cast Steel Wire.....50%

Spooled Wire—

Annealed and Tinned, 70&10&10&10%
Brass and Copper...60&10&10&10%
Retailers' Assortments, per box. *$1.90@$2.10*

Bright Wire Goods—

Steel Wire Goods, 90&20@90&20&10%
Brass Wire Goods, 90&20@90&20&10%
Brass Cup and Shoulder Hooks, 85%

Wire Cloth and Netting—

Galvanized Poultry Netting, 80&10&5@80&10&10%
Screen Cloth, 12 Mesh, Per 100 sq. ft.; Painted, $1.35; Galvanized, $1.95; 14 Mesh, Bronze $6.50.
Standard Galv. Hardware Grade: 100 ft. rolls, 24 to 48 in. wide, Per 100 sq. ft.
Nos. 2, 2½ and 3 Mesh....$2.50
Nos. 4 and 5 Mesh.....$2.75
No. 6 Mesh.....$3.00
Nos. 7 and 8 Mesh.....$3.50

Wire, Barb—See *Trade Report*

Wrenches—

Agricultural .....75&10@80&5%
*Alligator or Crocodile.*70&10@75%
Baxter Pattern S Wrenches, 70&5@70&10%
Drop Forged S.....45@45&5%
Acme .....60&10%
Alligator Pattern, 70%; Bull Dog..70%
Bemis & Call's:
Adjustable S, 40&5%; Adjustable S Pipe, 40&5%; Briggs Pattern, 40%; Combination Bright, 50%.
Steel Handle Nut.....50&5%
Combination Black.....50&5%
Merrick Pattern.....50&5%
Coes' Genuine Knife Hdl...40&10&5%
Coes' Genuine Steel Hdl...40&10&5&5%
Coes' Genuine Key Model..40&10&5&5%
Coes' Genuine Hammer Handle..... 40&10&5&5%
Coes' "Mechanics'"...40&10&5&5%
Hercules 70%
W. & B. Machinist:
Case lots.....50&10%
Less than case lots.....50%
W. & B. Railroad Special:
Case lots.....50%
Less than case lots.....40&10&5%
Solid Handles, P., S. & W..50&10%; full cases.....50&10&5%
Vulcan and Acrippa Chain.....50%
Wizard Adjustable Ratchet.....50%

Can and Jar—

Beni. P. Forbes Triumph, doz., $0.75; Triumph Syrup Cap, gro. $4.00

Wrought Goods—

Staple Hooks, &c., list March 11, '02.....90@—%

Zinc—

(Cask lots, 600 lb., at mill.)
Sheet.....*per 100 lb., $8.00*

For the Table of "Current Metal Prices" see the First Issue of Every Month.